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To Mr. F.J. Kee
Director of Research

SURFACE WIND FIELD CALCULATIONS FOR 1983 PICKERING CONTINGENCY EXERCISE

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ABSTRACT

A simple surface wind model was run for the meteorological scenario used for the 1983 Pickering Contingency Exercise. This was done to investigate, in a preliminary way, the potential usefulness of a model of this type for emergency response. The predicted wind field was found to agree reasonably well with the measured values. The results also illustrated that the wind velocity may be highly non-uniform in the short range within a lakeshore environment. Recommendations are made for further verification and development of this wind model.

1.0 INTRODUCTION

The Emergency Planning Office of the Ministry of the Solicitor General carried out a major nuclear contingency exercise on May 11 and 12, 1983. In order to test the emergency procedures, an accident scenario was developed in advance, complete with dispersion of released radionuclides. The scenario encompassed a simulation of the release of radionuclides from Pickering NGS from 0800 h on May 11 to about 1000 h on May 12. The meteorological conditions on which the plume travel and dispersion were based were chosen from the real, historical days, April 2 and 3, 1982. A computerized dispersion model (Wright, 1983) was used with the hypothetical radionuclide release and the meteorology to set the scenario by providing simulated field measurements. This model system was also used for predictive and diagnostic calculations, by the Technical Support Section of the Provincial Emergency Operations Centre, during the exercise period.

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740635-536-091	837.07	July 27, 1983	83-322-K

The puff and plume models used in the dispersion modelling system assumed homogeneous meteorology in the short range (<50 km). In this report we investigate the validity of this assumption by calculating surface wind fields numerically for the Pickering site and the surrounding region with meteorological conditions of April 2 and 3, 1982 as input data. The model used was developed by Danard (1977) and has been implemented within the Atmospheric Research Section. As this model has not been validated for the area for which these calculations are made, this work is considered as a preliminary investigation of the potential usefulness and suitability of the model for such a site. In other words, this work is intended to show both the potential of the model for the specific application of contingency analysis and for the general study of the dispersion of atmospheric pollutants in lakeshore environments.

The model is briefly described in the next section, which is followed by a description of the input used and the results of the simulations. A discussion of the implications of the results is given in the final section, and an approach towards further model development is suggested.

2.0 DESCRIPTION OF THE MODEL

The surface wind model described here was originally developed by Danard (1977). The model makes use of a pressure tendency equation, the first law of thermodynamics and the equation of motion.

The pressure tendency equation is used to calculate the rate of change of the surface pressure. The first law of thermodynamics gives the surface temperature structure. The surface wind or the wind at anemometer level is calculated by the equation of motion with the terrain effect included in the horizontal pressure gradient term. The surface frictional force is given in a form of drag coefficients which are functions of the surface roughness length over water and land.

The initial winds used to generate the model are obtained from a balance between pressure gradient, Coriolis and surface frictional forces. The surface temperature and pressure fields are then modified by flow over varying topography and the winds are adjusted dynamically to the new pressure field. Thus, terrain data are required for the area of interest. Details of this algorithm have been discussed by Danard (1977) and Tam (1982).

3.0 RESULTS

3.1 Input Data

The model has been applied to six case studies on April 2 and 3, 1982 on the north shore of Lake Ontario. These cases are 0700 EST, 1300 EST and 1900 EST, April 2 and 0100 EST, 0700 EST and 1300 EST, April 3. The six-hour time interval was used because the large-scale weather maps required as input to the model are available only for these times. Table I lists the input data for these six surface wind simulations. Note that the water surface temperature was assumed constant for all the case studies. The surface roughness length was assumed to be 0.1 cm over the lake and 10 cm over the land.

TABLE I

INPUT DATA FOR PICKERING SURFACE WIND SIMULATIONS ON APRIL 2 and 3, 1982

Reference Station	Toronto International Airport (43°48'N)					
Date	April 2			April 3		
Time (EST)	0700	1300	1900	0100	0700	1300
Sea Level Pressure (mb)	1025.8	1023.5	1017.7	1006.8	992.9	983.5
Sea Level Isobar Spacing (° lat)	2.5	2.0	1.3	2.5	1.1	1.1
Sea Level Isobar Angle	340	145	130	170	130	210
Surface Temperature (°C)	-4	1	1	1	3	14
Lake Temperature (°C)	0	0	0	0	0	0
850 mb Height (m)	1548	1548	1548	1539	1530	1521
850 mb Contour Spacing (° lat)	4.5	5.0	5.0	3.0	1.5	1.0
850 mb Contour Angle	335	270	190	200	210	210
850 mb Temperature (°C)	-2	2	7	8	10	12
700 mb Height (m)	3020	3030	3040	2965	2890	2880
700 mb Temperature (°C)	-6	-4	-2	0	1	5

3.2 Model-Simulated Winds

Surface winds were simulated by the model with two different sets of grid spacing, 5 km grid for a larger scale simulation and 1 km grid for a finer one. Each scale has its corresponding terrain heights. A 25x25 grid was used in both cases. The detailed grid-by-grid simulated wind speed and wind direction are given in the appendix, while the wind vectors are discussed below.

For each set of results, the model ran in approximately 20 s of CPU time on the UNIVAC 1100 computer. The model, therefore, has potential to be used for 'real time' simulations. The model is also simple enough to be readily run on a mini-computer.

Figures 1a and 1b show the simulated winds at 0700 EST, April 2 by the 5 km and 1 km grid model, respectively. The winds were generally from the northwest. The winds were stronger over the lake than over the land. This is because the surface friction over the lake is considerably smaller than that over the land. The geostrophic wind in this case was 8.5 m s^{-1} from 339°.

FIGURE 1a

PREDICTED WIND FIELDS OVER PICKERING AREA
2 APRIL 1982
0700 EST

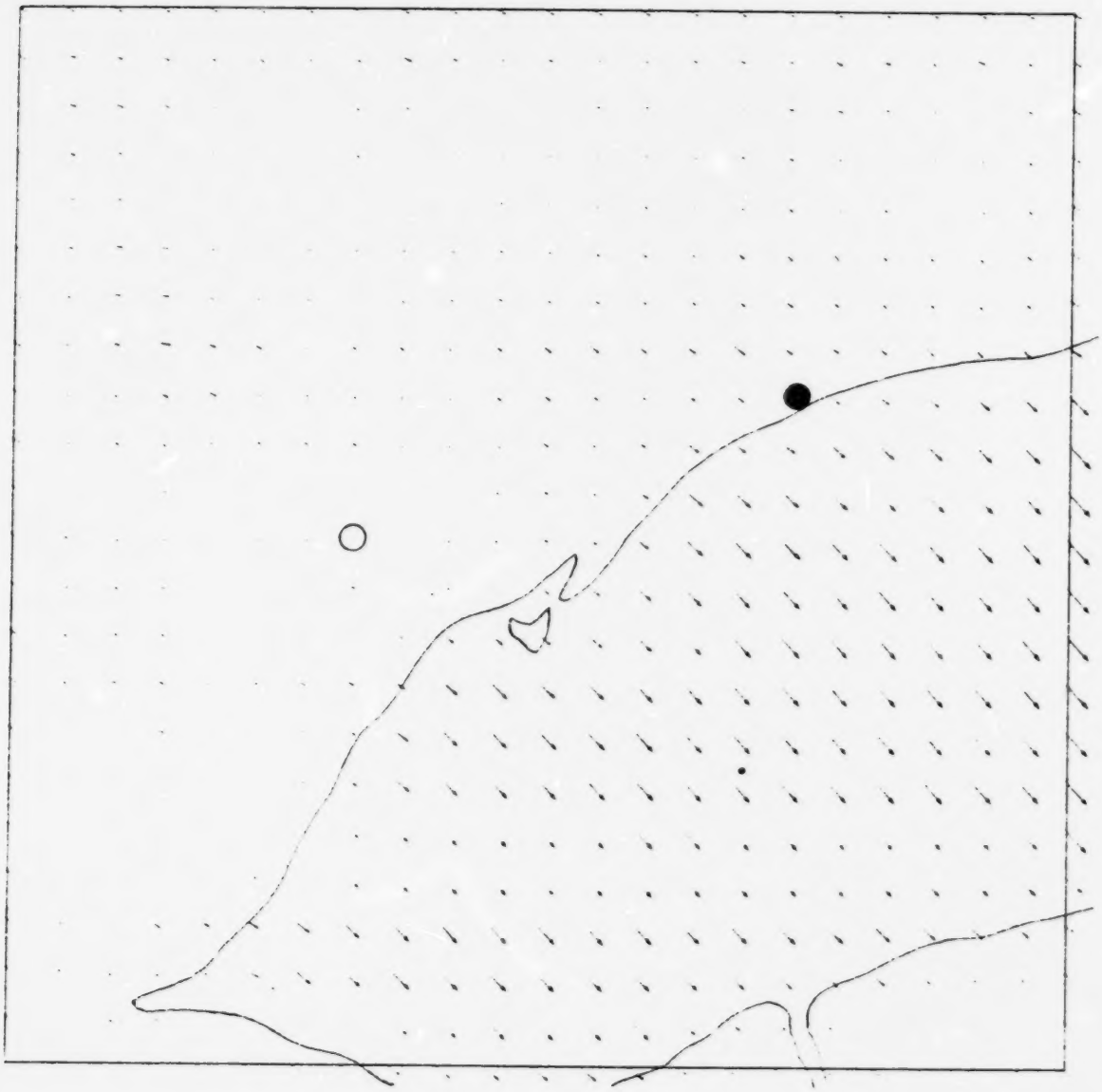
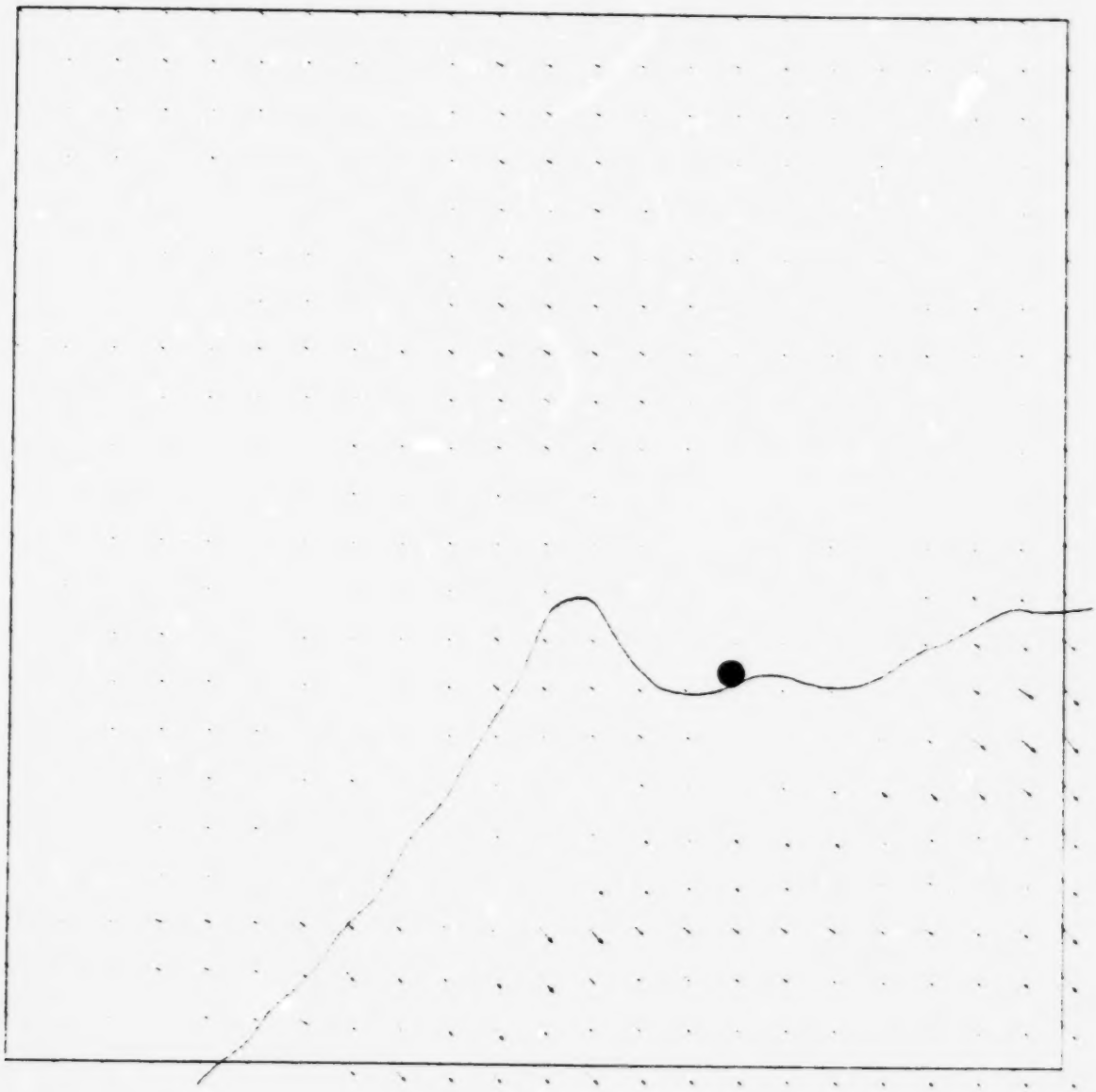


FIGURE 1b

PREDICTED WIND FIELDS OVER PICKERING AREA
2 APRIL 1982
0700 EST



Figures 2a and 2b show the simulated winds at 1300 EST, April 2. The general air flow was from the southeast. It can be seen that the wind speeds were considerably reduced over the land on the north shore of the lake. The winds were slightly veering at the Pickering area as shown in Figure 2b. The geostrophic wind in this case was from 147° at 12.9 m s^{-1}.

The simulated winds at 1900 EST, April 2 are displayed in Figures 3a and 3b. The winds were generally from the east with the geostrophic wind from 131° at 21.4 m s^{-1}. Again, slight veering was evident in the Pickering area (Figure 3b).

The three cases on April 3 are displayed in Figures 4 to 6. As shown in Figures 4a and 4b, the general air flow at 0100 EST was quite uniform and from the southeast. The geostrophic wind in this case was 23.1 m s^{-1} from 171°.

The next case (Figures 5a and 5b) shows the simulated winds at 0700 EST. The winds were generally from the east-southeast with the geostrophic wind from 134° at 26.3 m s^{-1}. As shown in Figure 5b, a divergence of the surface wind is clearly depicted along the shoreline in the Pickering area.

The last case shown (1300 EST) is probably a lake-breeze case. The winds were generally from the south. Although the geostrophic wind was quite strong at 29.2 m s^{-1} from 210°, the development of the lake breeze may still be observed from the veering of the surface winds along the lake shore in the Pickering area (Figure 6b). The surface temperature contrast between land and lake was 14°C in this case, which may enhance the on-shore flow component.

3.3 Comparison with Observations

Table II lists the observed and simulated surface winds at Toronto International Airport and Pickering Generating Station for the six cases. In general, the simulated winds agree quantitatively with the observed values. The greatest differences of the wind speed occurred at 0100 and 1300 EST, April 3 at the Pickering Station. These differences may be due to the microscale local effects which are beyond the scope of the present version of the model. However, the comparison is fairly good in the same cases at Toronto International Airport.

The greatest differences between predicted and measured wind directions occurred at 1300 EST, April 2 and 0100 EST, April 3. In these cases, the upper level weather maps (850 mb and 700 mb) are not available. These maps are issued every twelve hours. Thus, the input data were obtained by linear interpolation between the values given by the previous and following maps. The predictions for these times are thus likely to be less accurate.

FIGURE 2a

PREDICTED WIND FIELDS OVER PICKERING AREA
2 APRIL 1982
1300 EST

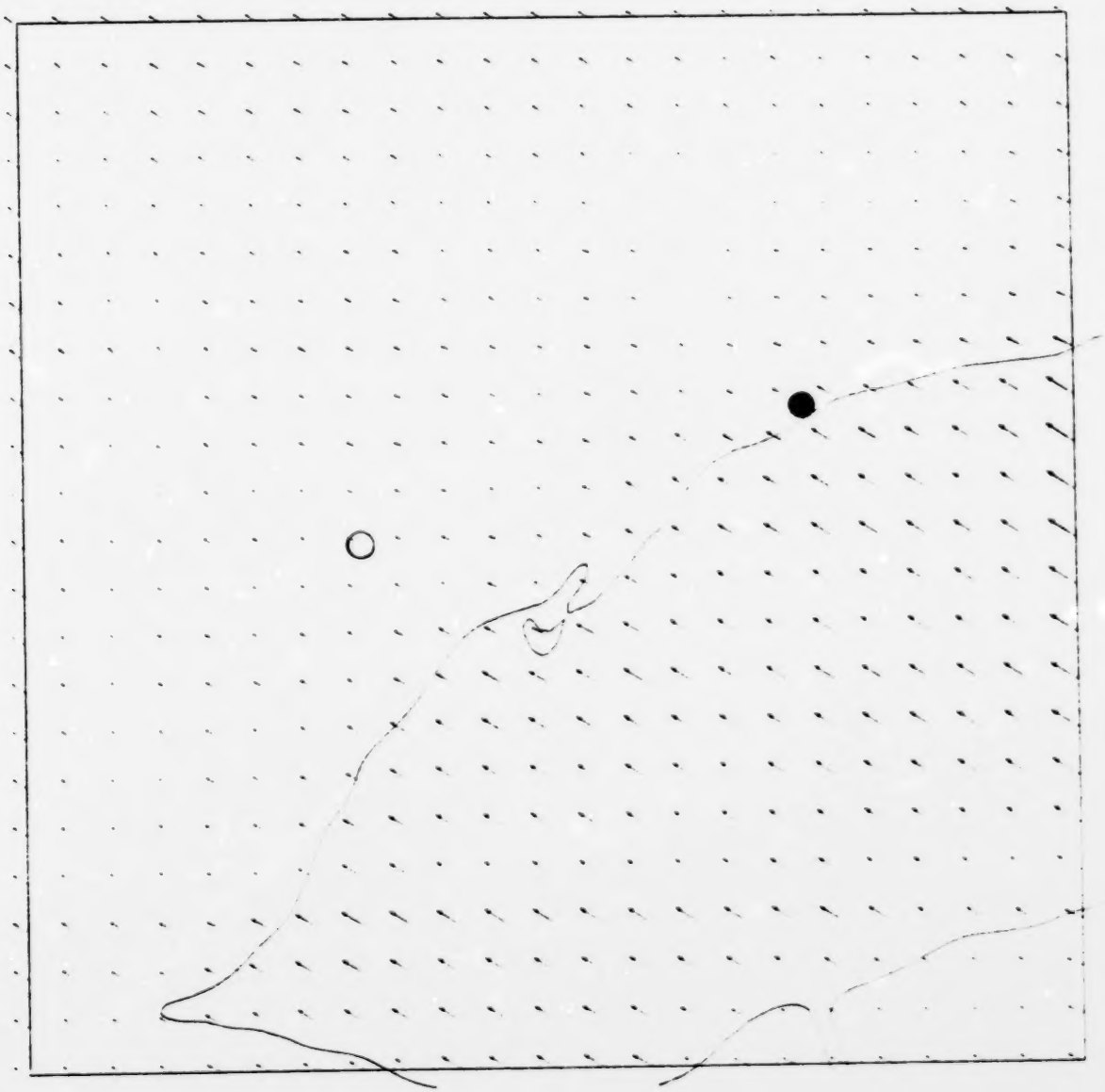


FIGURE 2b

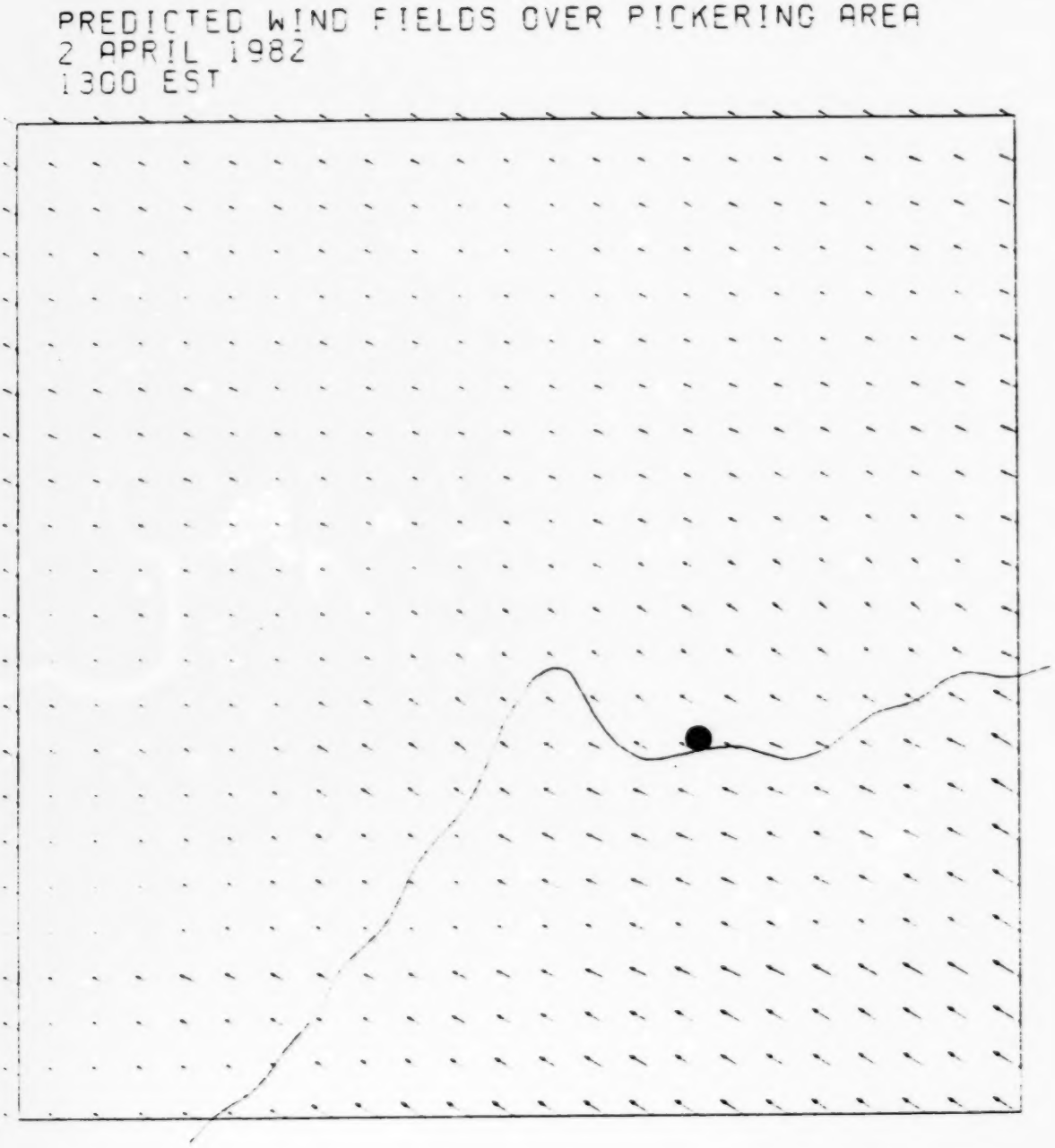

PREDICTED WIND FIELDS OVER PICKERING AREA
2 APRIL 1982
1300 EST

FIGURE 3a

PREDICTED WIND FIELDS OVER PICKERING AREA
2 APRIL 1982
1900 EST

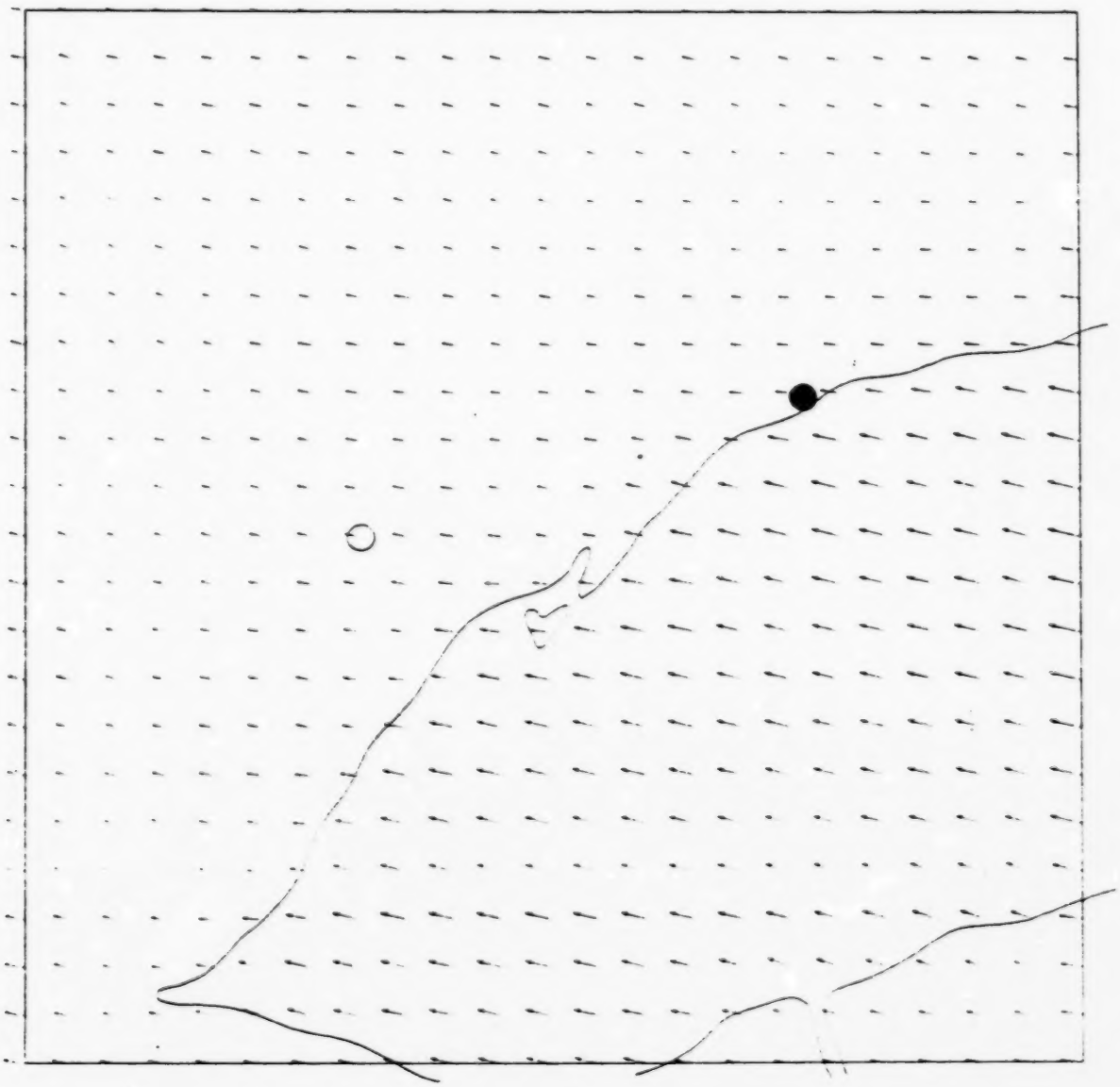


FIGURE 3b

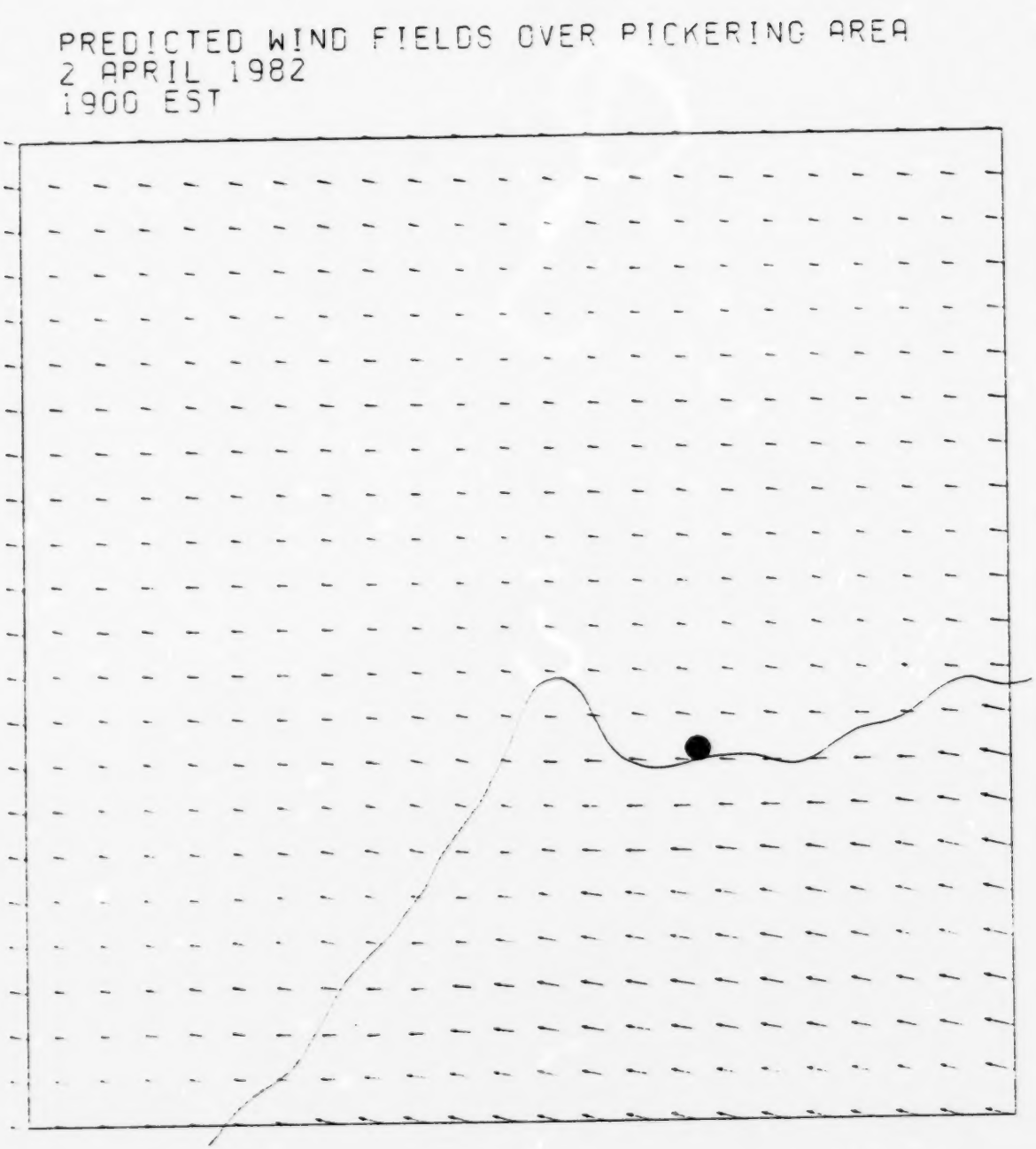

PREDICTED WIND FIELDS OVER PICKERING AREA
2 APRIL 1982
1900 EST

FIGURE 4a

PREDICTED WIND FIELDS OVER PICKERING AREA
3 APRIL 1982
0100 EST

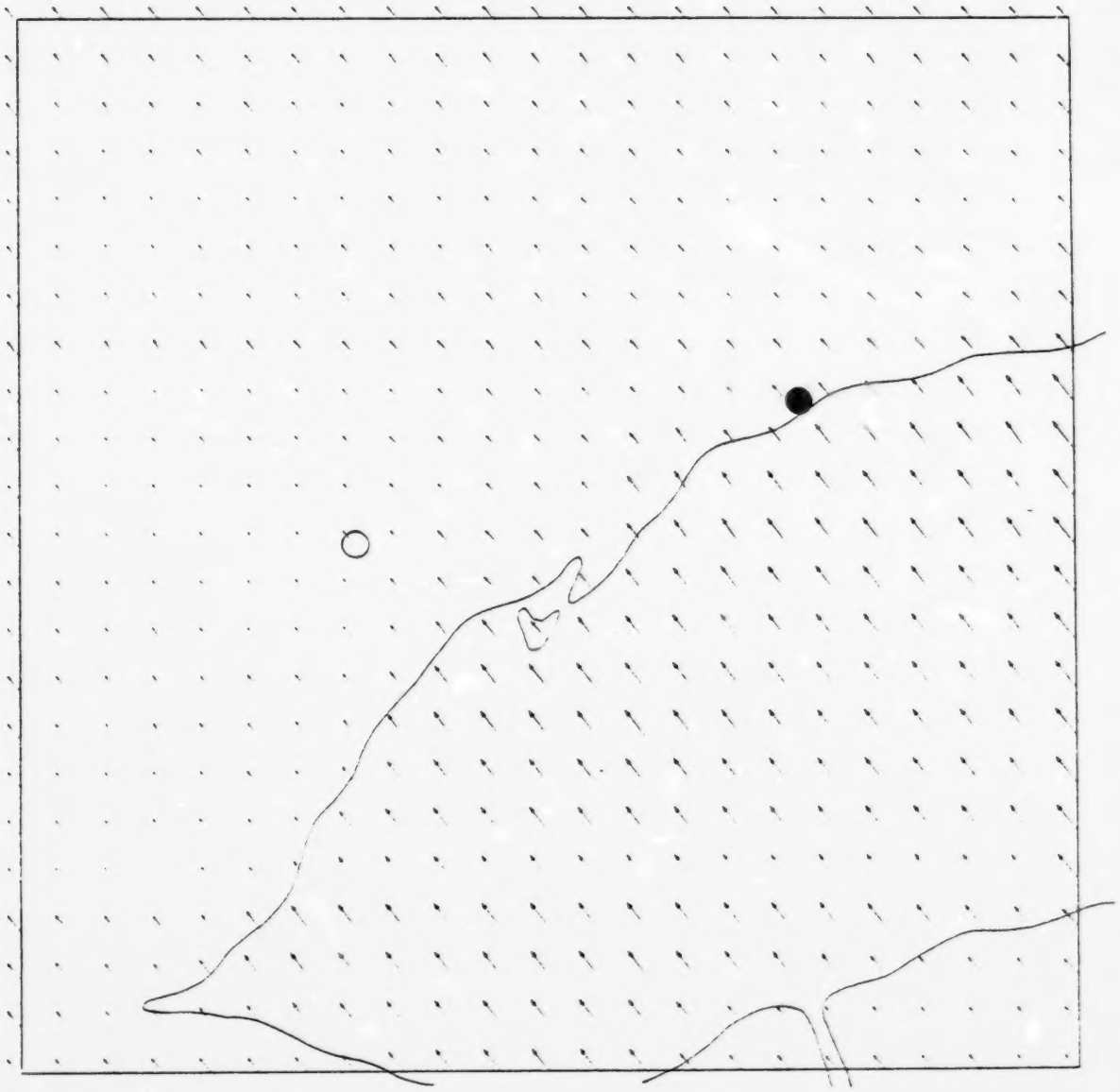


FIGURE 4b

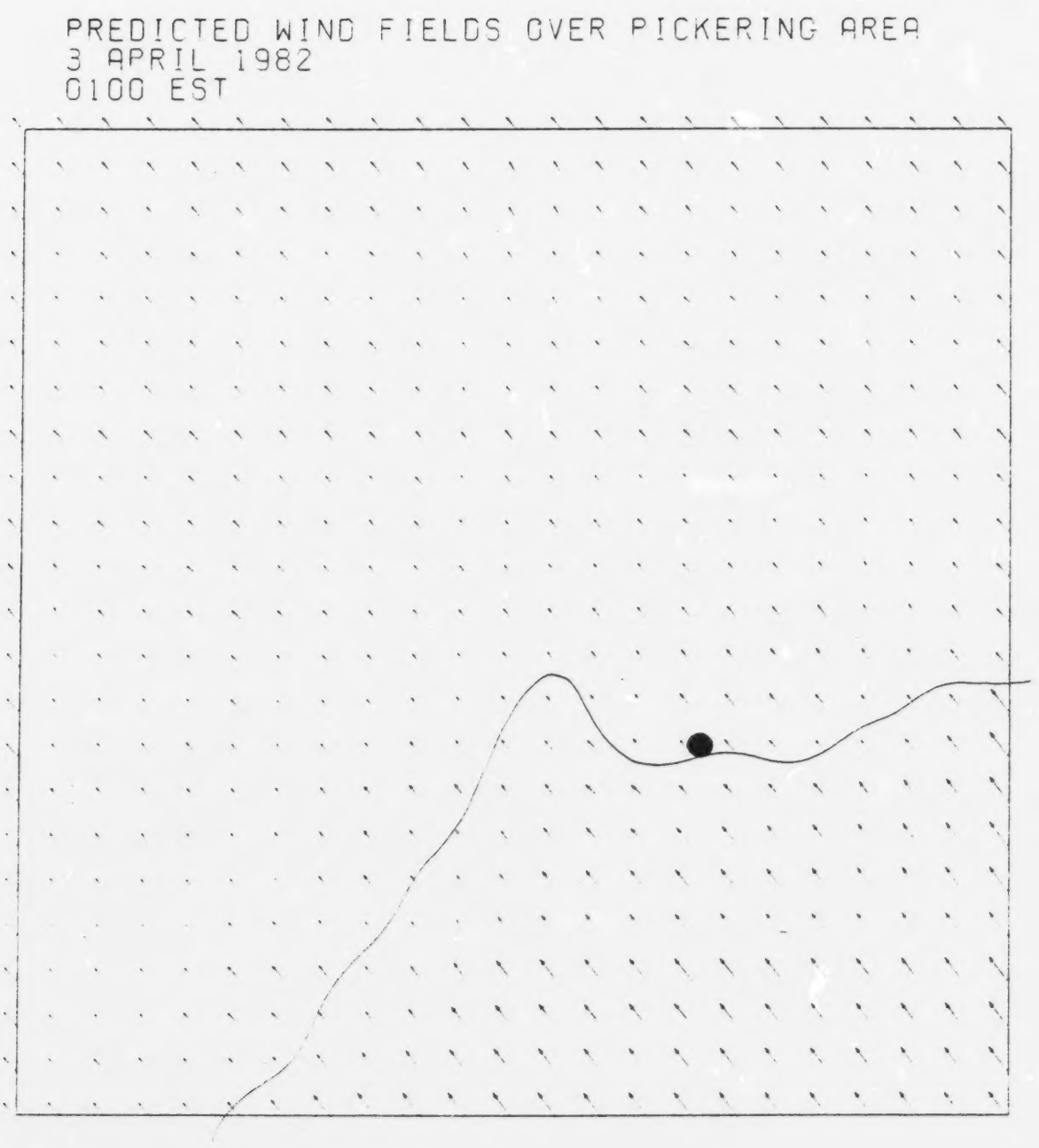

PREDICTED WIND FIELDS OVER PICKERING AREA
3 APRIL 1982
0100 EST

FIGURE 5a

PREDICTED WIND FIELDS OVER PICKERING AREA
3 APRIL 1982
0700 EST

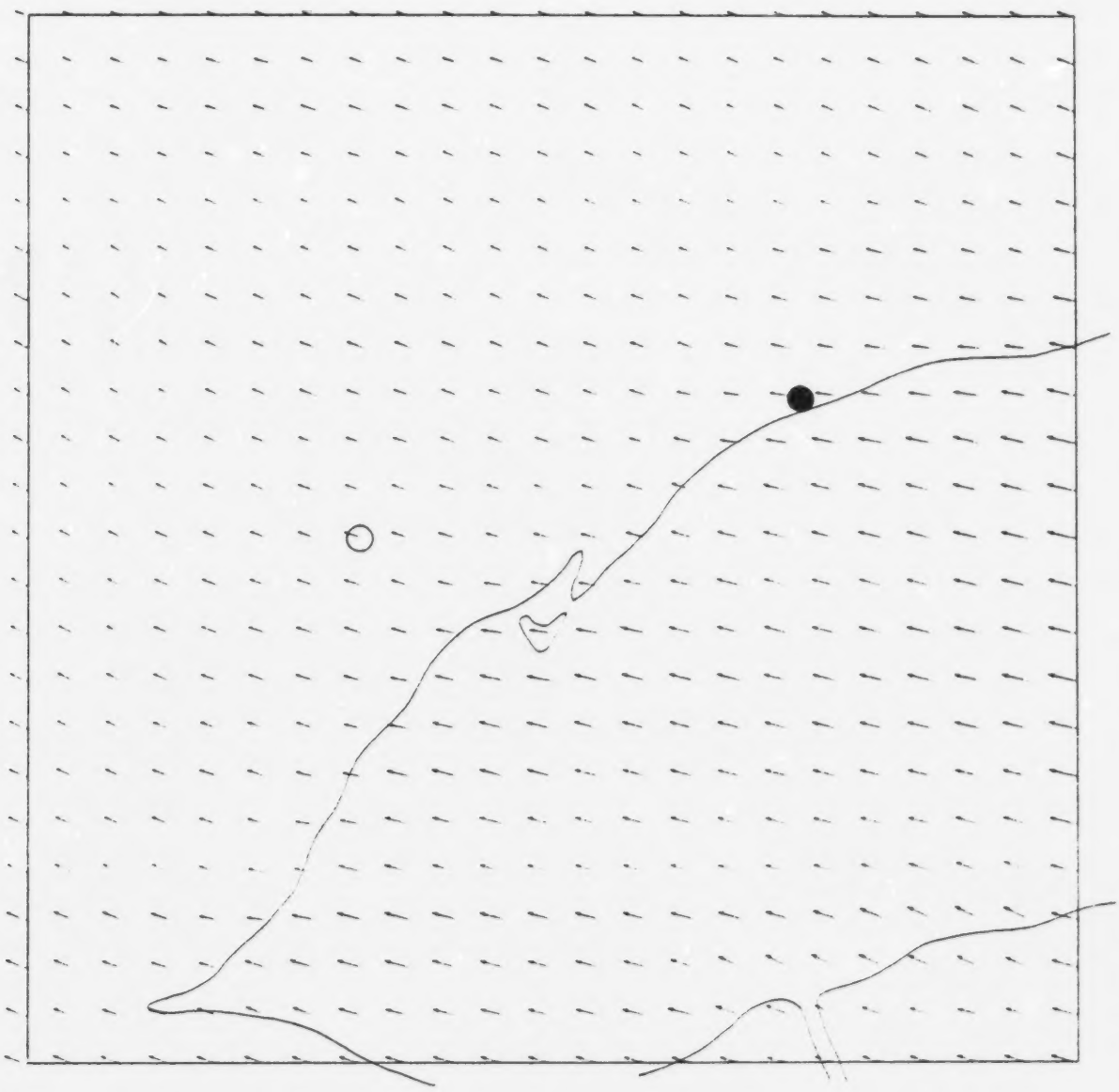


FIGURE 5b

PREDICTED WIND FIELDS OVER PICKERING AREA
3 APRIL 1982
0700 EST

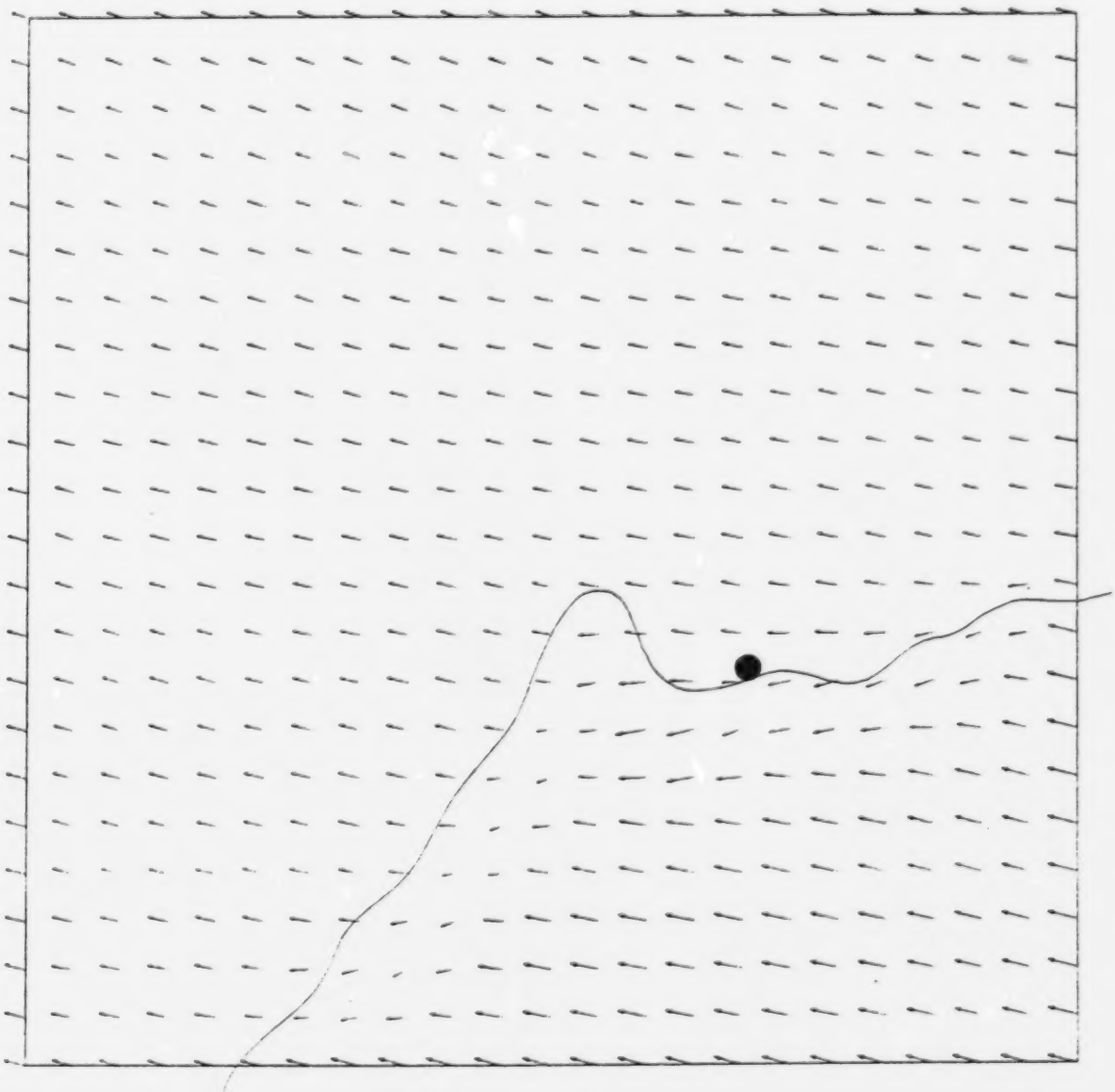


FIGURE 6a

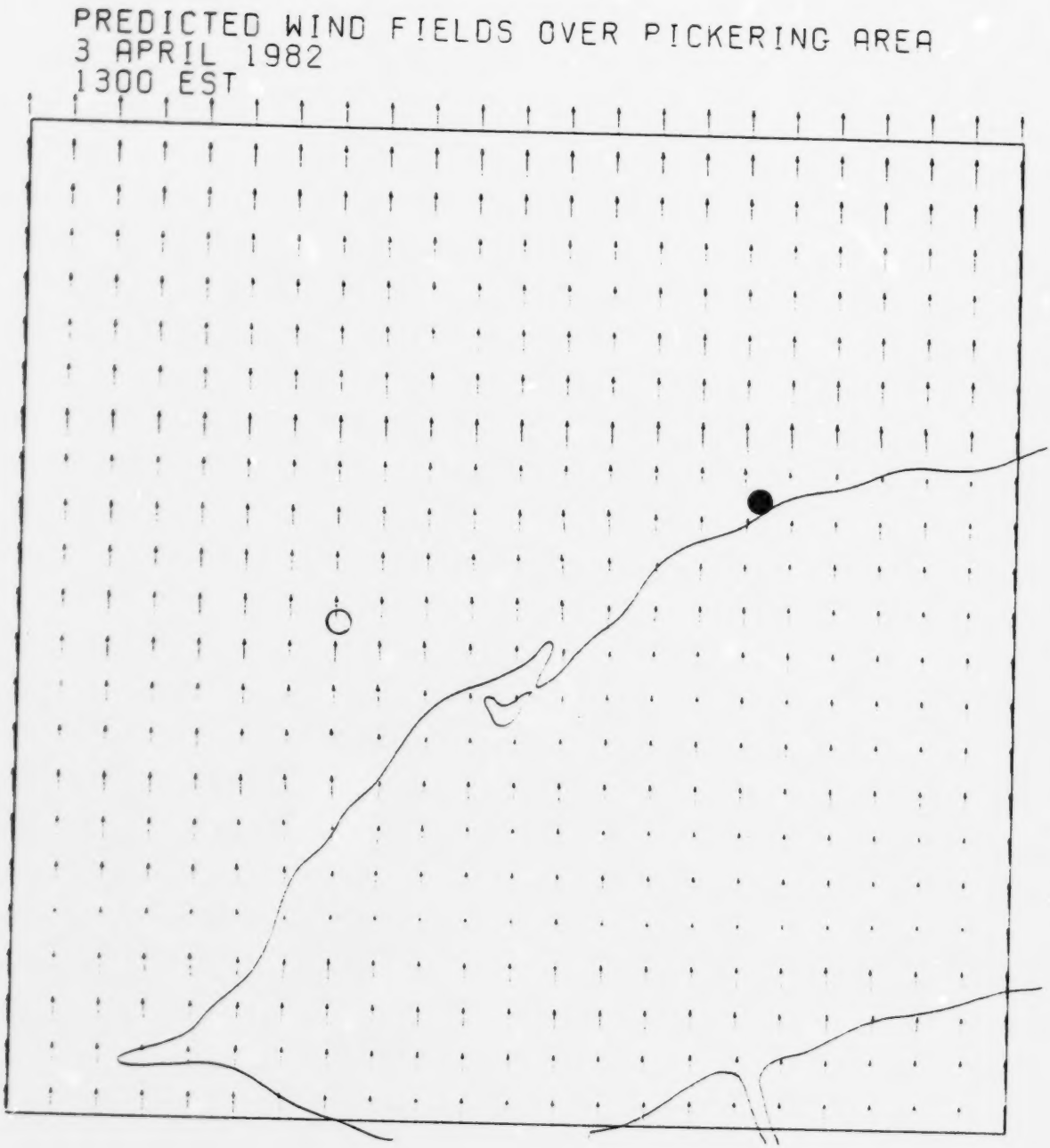

PREDICTED WIND FIELDS OVER PICKERING AREA
3 APRIL 1982
1300 EST

FIGURE 6b

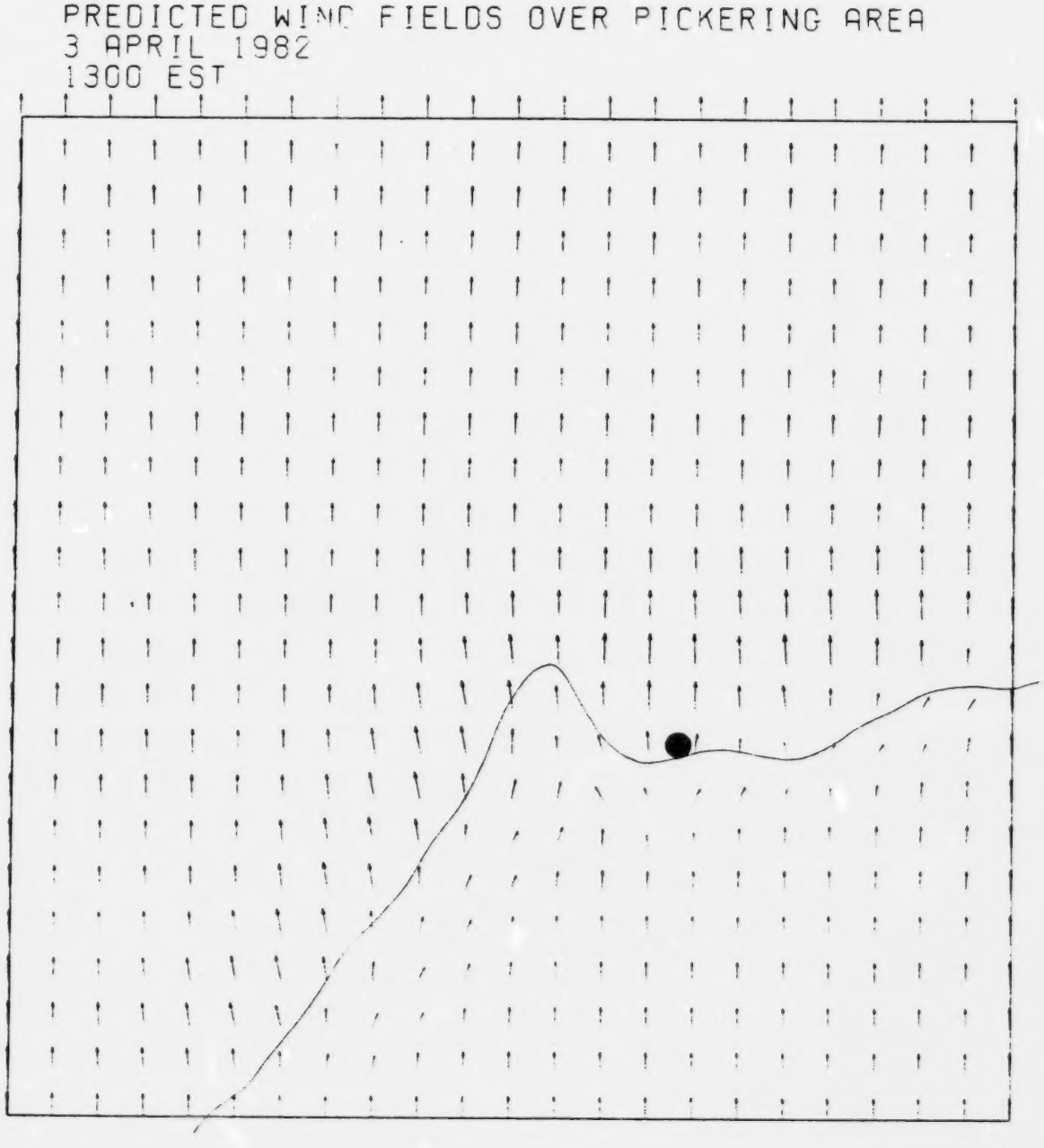

PREDICTED WIND FIELDS OVER PICKERING AREA
3 APRIL 1982
1300 EST

TABLE II

OBSERVED AND PREDICTED SURFACE WIND AT TORONTO INTERNATIONAL AIRPORT AND PICKERING

(wind speed ($m\ s^{-1}$)/wind direction (°))

	AIRPORT		PICKERING		
	Observed	Predicted by 5 km grid model	Observed	Predicted by 5 km grid model	Predicted by 1 km grid model
April 2					
0700	2.5/340	1.7/299	1.6/314	2.2/310	2.2/323
1300	3.5/130	3.1/118	4.3/160	4.4/117	4.5/116
1900	5.4/90	4.9/99	8.4/108	6.3/97	6.2/95
April 3					
0100	5.4/100	5.3/140	11.6/94	6.7/139	6.7/138
0700	7.0/90	7.9/107	10.5/91	9.1/97	7.1/86
1300	12.4/220	11.5/179	5.4/194	11.2/178	9.7/188

4.0 SUMMARY AND RECOMMENDATIONS

A simple model was used to predict the surface wind field over an area on the north shore of Lake Ontario. The simulated winds demonstrate the fact that local effects, such as the land-lake boundary and topography, can lead to significant inhomogeneity in the wind field, hence dispersion models based on meteorological homogeneity and thus constant wind vector, in the short range, such as those used for the contingency exercise, would give predictions involving significant error.

Since the present model simulations were carried out as a preliminary investigation for illustrative purposes, no attempt was made to optimize the model for the Pickering area. Predicted results did, however, agree reasonably well with observed values. It is concluded that this model does have potential usefulness for contingency analysis. Required input is reasonably simple and the model can be run in times sufficiently short to be useful. Model verification and adaption to likely sites is, however, still needed.

The following recommendations are, therefore, suggested:

(i) A detailed verification and sensitivity analysis of the model should be made, particularly in regard to application to the microscale (<10 km).

(ii) Methods of improving the time resolution of the model should be investigated. This can, perhaps, be attempted using meteorological data available at short (hourly or less) time intervals.

(iii) The surface wind field model should be combined with some scheme of describing vertical mixing in order to be able to generate concentration profiles of emissions. Model predictions could then be compared with the predictions of models which assume homogeneous meteorology and terrain.

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TAM, Y.T., 1982: "A Method of Computing Surface Winds," Ontario Hydro Research Division Report No 82-20-K.

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APPENDIX

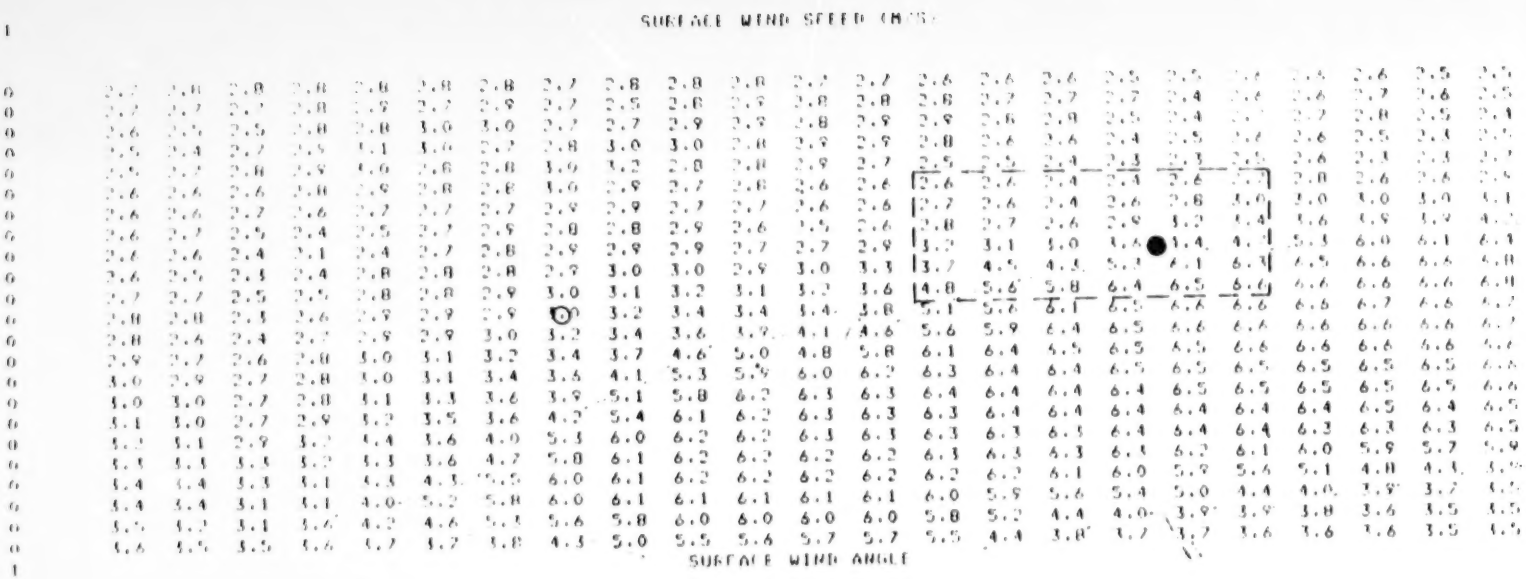
Surface wind speed and direction predicted by the model on a grid-by-grid format are presented in this appendix.

The domain of the 1-km grid simulation is outlined by a rectangle on the 5-km grid domain. The solid dot denotes the location of Pickering NGS and the empty dot denotes the location of Toronto International Airport. The shoreline is indicated in outline.

SURFACE WIND SPEED (M/S)

0	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4	1.4

SURFACE WIND ANGLE


SURFACE WIND SPEED (M/S)
SURFACE WIND ANGLE

APRIL 1980 1700 EST

SURFACE WIND FIELD INTERPOLATED BY A 1 KM GRID MODEL

SURFACE WIND SPEED (M/S)

1																							
0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	2.9	2.9	3.0	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
0	3.0	2.9	3.0	3.0	3.0	3.0	3.0	3.1	3.0	2.8	2.6	2.4	2.5	2.8	2.9	2.9	2.8	2.9	2.8	2.8	3.0	3.1	3.2
0	3.0	2.9	2.9	3.0	3.1	3.0	3.1	3.1	3.1	2.7	2.5	2.4	2.4	2.7	2.8	2.9	2.9	2.9	2.8	2.8	3.0	3.2	3.3
0	3.1	2.9	3.0	3.2	3.1	3.1	3.2	3.2	3.1	2.7	2.4	2.4	2.5	2.7	2.9	2.9	2.9	3.0	2.9	2.8	3.1	3.2	3.3
0	3.1	3.0	3.2	3.1	3.1	3.2	3.1	3.1	3.0	2.7	2.5	2.4	2.4	2.5	2.8	3.0	2.9	3.0	2.9	2.9	3.1	3.2	3.3
0	3.1	3.1	3.1	3.2	3.2	3.0	3.0	3.1	3.0	2.6	2.5	2.3	2.5	2.7	2.9	2.9	3.0	3.0	2.9	2.9	3.1	3.2	3.3
0	3.1	3.1	3.1	3.2	3.1	3.1	3.1	3.0	2.8	2.7	2.4	2.4	2.6	2.6	2.9	3.1	3.1	3.1	3.0	2.9	3.0	3.2	3.3
0	3.2	3.1	3.1	3.2	3.1	3.1	3.1	3.0	2.8	2.6	2.5	2.6	2.5	2.8	3.0	3.1	3.1	3.1	3.0	2.9	3.2	3.3	3.3
0	3.2	3.2	3.2	3.3	3.2	3.0	3.1	3.0	2.8	2.6	2.5	2.6	2.5	2.8	3.0	3.1	3.2	3.2	3.2	3.1	3.2	3.3	3.3
0	3.2	3.2	3.2	3.3	3.2	3.1	3.0	2.9	2.9	2.6	2.5	2.6	2.7	2.9	3.0	3.2	3.3	3.4	3.5	3.4	3.4	3.4	3.4
0	3.2	3.2	3.2	3.3	3.2	3.1	3.1	3.0	2.9	2.7	2.7	2.6	2.8	3.0	3.2	3.4	3.6	3.8	3.9	3.9	3.7	3.6	3.6	3.4
0	3.2	3.2	3.2	3.3	3.3	3.1	3.1	3.0	2.9	2.8	2.8	2.9	3.0	3.2	3.4	3.6	3.8	3.9	3.9	3.7	3.6	3.6	3.4	3.4
0	3.2	3.1	3.1	3.3	3.2	3.2	3.1	3.1	3.1	3.1	3.1	3.2	3.3	3.5	3.8	4.1	4.3	4.3	4.2	4.0	3.9	3.8	3.4	3.4
0	3.2	2.9	3.1	3.3	3.2	3.2	3.2	3.3	3.4	3.5	3.5	3.6	3.7	4.0	4.2	4.4	4.5	4.6	4.4	4.2	4.4	4.5	4.2	3.9
0	3.2	3.0	3.1	3.2	3.2	3.3	3.4	3.6	3.8	3.9	3.9	3.9	4.0	4.3	4.4	4.6	4.7	4.7	4.4	4.7	4.9	5.4	5.2	4.9
0	3.2	3.0	3.1	3.2	3.3	3.3	3.6	4.0	4.3	4.2	4.1	4.0	4.3	4.6	4.6	[illegible]	4.7	4.2	4.5	4.7	5.3	5.2	5.4	5.1
0	3.3	3.0	3.1	3.2	3.3	3.3	3.6	4.0	4.3	4.2	4.1	4.0	4.3	4.6	4.6	[illegible]	4.7	4.2	4.5	4.7	5.3	5.2	5.4	5.1
0	3.3	3.0	3.1	3.3	3.3	3.6	4.0	4.4	4.6	4.3	4.2	4.1	4.4	4.8	4.7	4.7	5.0	5.0	4.9	5.0	5.3	5.1	5.1	5.4
0	3.3	3.1	3.2	3.3	3.5	3.9	4.3	4.6	4.6	4.2	4.0	4.2	4.7	4.9	5.0	5.2	5.4	5.3	5.3	5.3	5.6	5.8	5.6	5.3
0	3.3	3.1	3.2	3.5	3.8	4.1	4.5	4.6	4.4	4.0	4.0	4.5	4.8	5.0	5.3	5.5	5.5	5.4	5.3	5.3	5.6	6.0	6.3	6.0
0	3.3	3.2	3.3	3.7	4.0	4.5	4.6	4.4	4.1	3.8	4.2	4.6	4.8	5.2	5.5	5.6	5.7	5.6	5.6	5.6	5.9	6.2	6.4	6.1
0	3.3	3.2	3.4	3.9	4.2	4.4	4.4	4.2	3.9	4.0	4.4	4.7	5.0	5.3	5.7	5.8	5.8	5.8	5.8	6.0	6.3	6.4	6.2	5.9
0	3.3	3.3	3.5	3.9	4.3	4.4	4.5	4.3	4.2	4.5	4.7	4.9	5.3	5.7	5.9	6.0	6.1	6.0	6.0	5.9	6.1	6.3	6.2	6.0
0	3.4	3.4	3.6	3.9	4.1	4.3	4.6	4.9	5.0	5.2	5.3	5.5	5.8	6.0	6.2	6.2	6.2	6.2	6.2	6.1	6.1	6.2	6.3	6.1
0	3.3	3.3	3.3	3.3	3.5	3.7	4.4	5.7	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.2	6.3	6.3	6.3	6.3	6.3

SURFACE WIND ANGLE

1																							
0	119.	118.	118.	118.	117.	118.	117.	117.	117.	118.	118.	117.	115.	115.	115.	115.	116.	115.	115.	114.	115.	114.	113.
0	118.	117.	115.	114.	115.	115.	115.	115.	115.	115.	116.	118.	119.	115.	114.	114.	111.	112.	113.	113.	110.	113.	114.
0	117.	116.	115.	114.	116.	114.	116.	115.	116.	117.	117.	118.	120.	118.	114.	115.	112.	113.	113.	115.	111.	113.	114.
0	117.	116.	115.	117.	116.	118.	117.	117.	115.	117.	118.	120.	119.	118.	112.	115.	114.	114.	115.	116.	113.	113.	114.
0	117.	116.	115.	114.	115.	115.	114.	114.	114.	114.	115.	116.	115.	115.	113.	110.	113.	112.	113.	114.	113.	113.	114.
0	116.	114.	114.	113.	113.	114.	114.	112.	111.	112.	113.	110.	113.	110.	112.	109.	111.	111.	112.	113.	112.	111.	113.
0	116.	113.	112.	112.	113.	113.	113.	113.	110.	111.	111.	112.	112.	111.	111.	110.	111.	110.	113.	112.	113.	112.	113.
0	116.	112.	112.	111.	112.	114.	112.	112.	109.	112.	108.	113.	110.	113.	111.	111.	111.	112.	114.	114.	113.	114.	113.
0	114.	112.	110.	110.	110.	112.	112.	113.	112.	111.	114.	112.	112.	113.	112.	113.	113.	115.	115.	119.	117.	114.	113.
0	115.	111.	111.	109.	110.	110.	111.	110.	113.	111.	116.	114.	116.	114.	115.	116.	116.	116.	120.	123.	121.	118.	113.
0	114.	113.	112.	111.	108.	110.	110.	111.	112.	114.	116.	117.	118.	118.	119.	119.	121.	123.	124.	128.	124.	120.	113.
0	116.	120.	113.	114.	110.	110.	110.	111.	114.	117.	1.0.	123.	122.	123.	123.	123.	126.	129.	129.	129.	124.	113.	
0	115.	119.	116.	113.	112.	111.	112.	113.	116.	121.	1.3.	126.	126.	124.	125.	124.	124.	124.	126.	126.	123.	122.	115.
0	116.	118.	1.0.	115.	115.	113.	113.	115.	119.	123.	126.	125?	124.	124.	124.	122.	119.	115.	115.	117.	117.	120.	
0	116.	118.	118.	116.	115.	115.	117.	118.	121.	125.	127.	126.	120.	118.	119.	[illegible]	114.	113.	113.	115.	115.	115.	122.
0	115.	117.	118.	116.	116.	116.	118.	120.	121.	124.	124?	123.	119.	114.	113.	112.	112.	112.	113.	114.	115.	116.	122.
0	115.	116.	117.	117.	119.	119.	119.	121.	121.	122.	121.	118.	118.	114.	113.	113.	113.	113.	114.	115.	115.	117.	122.
0	114.	116.	115.	115.	117.	115.	120.	121.	120.	119.	118.	117.	116.	114.	113.	113.	113.	114.	115.	117.	118.	119.	122.
0	115.	114.	114.	115.	115.	118.	117.	118.	117.	116.	116.	116.	115.	114.	114.	114.	115.	116.	117.	118.	119.	120.	122.
0	115.	115.	113.	113.	115.	115.	115.	115.	114.	114.	116.	116.	115.	115.	115.	116.	116.	117.	119.	120.	121.	121.	122.
0	115.	113.	114.	113.	114.	114.	114.	117.	118.	117.	118.	118.	118.	119.	119.	119.	119.	120.	121.	122.	121.	121.	122.
0	115.	115.	115.	116.	114.	115.	118.	120.	122.	122.	121.	121.	121.	121.	121.	121.	121.	122.	122.	123.	122.	122.	122.
0	115.	116.	115.	116.	114.	114.	117.	120.	121.	122.	122.	122.	122.	122.	122.	122.	[illegible]	122.	122.	122.	122.	122.	122.

EOF:52

0:

SURFACE WIND SPEED (M/S)

SURFACE WIND ANGLE

APRIL 2 1982 1900 EST
SURFACE WIND FIELD PREDICTED BY A 1 KM GRID MODEL

SURFACE WIND SPEED (M/S)

0	4.4	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.4	4.4	4.4	4.5	4.7	4.7	4.7	4.7	4.6	4.6	4.7	4.7	4.7	4.8	4.7
0	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.7	4.7	4.3	4.0	3.7	3.9	4.6	4.7	4.6	4.5	4.5	4.4	4.4	4.5	4.5	4.6
0	4.5	4.6	4.4	4.5	4.6	4.6	4.6	4.9	4.8	4.2	3.8	3.7	3.8	4.5	4.8	4.6	4.4	4.6	4.5	4.4	4.5	4.5	4.9
0	4.6	4.7	4.7	4.7	4.5	4.6	4.8	4.9	4.9	4.1	3.7	3.8	3.9	4.4	4.9	4.7	4.3	4.6	4.5	4.4	4.5	1.6	5.0
0	4.7	4.8	4.8	4.6	4.7	4.8	4.7	4.8	4.8	4.1	3.9	3.9	3.9	4.0	4.8	5.1	4.6	4.6	4.5	4.4	4.4	4.5	5.0
0	4.7	5.0	4.7	4.7	4.8	4.5	4.6	5.0	4.9	4.1	3.8	3.9	4.2	4.4	4.7	4.9	4.8	4.7	4.6	4.5	4.5	4.7	5.0
0	4.7	5.0	4.8	4.8	4.7	4.6	4.7	4.7	4.7	4.3	3.7	4.0	4.4	4.4	4.7	5.0	5.0	4.9	4.7	4.5	4.3	4.6	5.0
0	4.8	5.0	4.9	4.9	4.7	4.6	4.7	4.6	4.6	4.2	4.0	4.3	4.4	4.6	4.8	5.0	4.9	4.9	4.7	4.5	4.7	4.7	5.1
0	4.8	5.1	4.9	4.8	4.9	4.9	4.7	4.4	4.5	4.3	4.1	4.4	4.5	4.7	4.8	5.1	5.0	5.0	4.8	4.6	4.6	4.7	5.1
0	4.9	5.2	5.0	5.0	5.0	4.9	4.7	4.5	4.5	4.4	4.3	4.2	4.4	4.8	5.1	5.1	4.9	5.0	4.8	4.7	4.6	4.7	5.1
0	4.9	5.0	5.1	5.1	5.2	4.9	4.7	4.6	4.5	4.4	4.4	4.4	4.6	4.8	5.1	5.1	5.1	5.1	5.0	4.7	4.5	4.9	5.2
0	4.9	4.8	4.8	5.0	5.1	5.1	4.8	4.6	4.5	4.5	4.5	4.5	4.7	4.9	5.2	5.3	5.3	5.4	5.3	4.9	4.7	5.0	5.2
0	4.9	4.6	4.7	5.0	5.0	5.1	4.9	4.8	4.7	4.7	4.6	4.7	4.9	5.3	5.5	5.5	5.5	5.8	5.8	5.4	5.3	5.5	5.4
0	4.9	4.7	4.5	4.7	5.0	5.1	5.0	4.9	5.0	4.9	5.0	4.9	5.0	5.6	5.9	5.9	6.0	6.3	6.2	5.9	5.7	6.6	8.1
0	4.9	4.8	4.7	4.8	4.9	4.8	4.9	5.2	5.3	5.3	5.2	4.8	5.5	6.6	6.6	6.2	6.4	6.8	6.5	6.4	6.8	7.8	8.8
0	5.0	4.9	4.8	4.8	4.7	4.9	5.1	5.3	5.6	5.7	5.6	5.0	5.7	7.4	7.4	6.7	6.9	7.4	7.4	7.3	7.5	8.2	8.8
0	5.0	5.1	4.9	4.7	4.7	5.0	5.3	5.6	6.0	5.9	5.5	5.5	6.5	7.6	7.9	7.8	7.9	8.0	7.9	7.8	7.9	8.4	8.8
0	5.0	5.1	4.9	4.9	4.8	5.0	5.5	5.9	6.1	5.7	5.5	6.4	7.5	8.1	8.3	8.3	8.3	8.4	8.2	8.0	8.0	8.4	8.7
0	5.0	5.2	4.7	4.6	4.9	5.6	6.0	6.0	6.0	5.6	5.9	7.2	8.0	8.4	8.5	8.6	8.6	8.5	8.4	8.1	8.1	8.5	8.7
0	5.0	5.1	4.9	4.8	5.2	5.7	5.9	6.0	5.8	5.9	6.7	7.7	8.3	8.5	8.6	8.6	8.6	8.6	8.4	8.1	8.1	8.5	8.7
0	5.1	5.1	4.9	5.0	5.4	5.8	6.1	5.8	5.7	6.6	7.5	8.1	8.4	8.6	8.6	8.6	8.6	8.6	8.4	8.2	8.2	8.5	8.7
0	5.1	5.2	5.2	5.3	5.4	5.5	5.9	6.4	6.8	7.6	8.1	8.4	8.6	8.6	8.7	8.7	8.6	8.6	8.5	8.3	8.3	8.5	8.7
0	5.1	5.1	5.1	5.1	5.3	5.7	6.6	8.2	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7

SURFACE WIND ANGLE

0	98.	98.	98.	98.	98.	98.	98.	98.	98.	98.	98.	98.	97.	97.	97.	97.	97.	97.	97.	97.	97.	97.	97.
0	98.	100.	100.	99.	100.	99.	100.	100.	101.	100.	99.	100.	102.	99.	99.	100.	96.	96.	98.	97.	96.	98.	96.
0	98.	98.	98.	98.	100.	98.	100.	100.	101.	101.	99.	99.	102.	99.	97.	100.	97.	97.	97.	99.	96.	98.	96.
0	98.	96.	96.	99.	97.	99.	99.	99.	98.	98.	96.	98.	98.	97.	91.	95.	96.	97.	96.	96.	96.	95.	96.
0	98.	98.	98.	97.	97.	99.	95.	96.	96.	94.	94.	94.	94.	96.	93.	92.	95.	96.	96.	96.	96.	95.	96.
0	98.	98.	98.	97.	99.	97.	96.	96.	94.	94.	94.	89.	94.	95.	97.	92.	95.	95.	97.	97.	96.	95.	96.
0	98.	96.	96.	98.	98.	97.	99.	97.	93.	93.	91.	93.	95.	94.	95.	94.	95.	94.	96.	94.	96.	96.	96.
0	98.	95.	96.	95.	95.	97.	97.	96.	91.	92.	89.	95.	92.	95.	94.	95.	94.	95.	96.	94.	96.	97.	96.
0	97.	94.	94.	95.	94.	96.	96.	96.	94.	92.	96.	94.	92.	94.	94.	97.	94.	96.	95.	98.	97.	95.	96.
0	97.	97.	93.	93.	95.	95.	95.	95.	97.	92.	97.	94.	96.	94.	96.	96.	95.	96.	95.	98.	95.	95.	96.
0	97.	99.	94.	94.	93.	94.	94.	94.	93.	93.	93.	93.	96.	96.	96.	95.	97.	97.	99.	100.	98.	96.	96.
0	98.	103.	95.	97.	93.	93.	93.	93.	94.	95.	95.	96.	95.	96.	98.	98.	99.	98.	102.	102.	102.	99.	96.
0	98.	100.	99.	96.	94.	93.	93.	93.	95.	97.	97.	99.	97.	97.	98.	100.	99.	100.	101.	101.	100.	96.	96.
0	98.	99.	102.	98.	98.	96.	93.	94.	97.	98.	100.	99.	93.	94.	98.	100.	97.	98.	99.	98.	98.	99.	103.
0	98.	98.	100.	101.	101.	97.	97.	97.	98.	101.	102.	100.	92.	93.	97.	[illegible]	[illegible]	[illegible]	[illegible]	98.	100.	103.	
0	98.	97.	100.	100.	99.	97.	99.	99.	101.	102.	101.	97.	95.	91.	95.	94.	91.	97.	96.	97.	98.	101.	102.	103.
0	98.	97.	98.	98.	98.	98.	98.	100.	101.	101.	99.	96.	97.	94.	91.	93.	96.	98.	98.	98.	99.	101.	102.	103.	104.
0	98.	98.	97.	95.	94.	96.	99.	100.	99.	97.	91.	93.	96.	98.	98.	98.	99.	100.	101.	102.	102.	103.	103.	104.
0	98.	98.	97.	97.	95.	99.	99.	100.	96.	91.	93.	97.	100.	100.	100.	99.	98.	100.	101.	101.	102.	102.	103.	104.
0	98.	96.	96.	97.	99.	100.	97.	94.	90.	87.	95.	98.	100.	100.	100.	100.	100.	100.	101.	101.	102.	102.	103.	104.
0	98.	97.	94.	96.	98.	96.	91.	88.	85.	89.	96.	98.	100.	100.	100.	100.	101.	101.	101.	102.	102.	102.	103.	104.
0	98.	95.	95.	97.	95.	93.	93.	91.	94.	92.	99.	100.	101.	101.	101.	101.	101.	101.	101.	102.	102.	102.	103.	104.
0	97.	98.	98.	98.	97.	97.	99.	102.	103.	103.	103.	103.	103.	104.	103.	104.	104.	104.	104.	103.	103.	104.	104.

APRIL 3 1987 0100 EST
SURFACE WIND FIELD REPORTED BY A 5 KM GRID MODEL

1 SURFACE WIND SPEED (M/S)

0	4.8	4.9	4.9	4.9	4.9	4.8	4.8	4.8	4.8	4.9	4.8	4.7	4.7	4.6	4.6	4.6	4.5	4.4	4.6	4.5	4.5	4.4	4.4
0	4.7	5.0	4.9	5.0	4.9	4.7	5.1	4.7	4.7	5.0	5.1	5.0	5.0	4.9	4.8	4.8	4.7	4.4	4.7	4.6	4.8	4.5	4.4
0	4.7	4.7	4.7	4.9	5.0	5.1	5.1	4.7	4.8	5.1	5.0	4.9	5.0	5.0	4.8	4.8	4.6	4.4	4.7	4.8	4.7	4.4	4.3
0	4.6	4.6	4.9	5.1	5.2	5.1	4.8	4.9	5.1	5.1	4.9	5.0	5.0	4.8	4.6	4.6	4.3	4.5	4.6	4.6	4.4	4.1	4.4
0	4.6	5.0	5.1	5.1	5.2	5.0	5.0	5.2	5.3	4.9	5.0	5.0	4.6	4.4	4.4	4.3	4.1	4.3	4.4	4.4	4.2	4.1	4.0
0	4.7	4.8	4.9	5.0	5.0	5.0	5.0	5.2	5.0	4.8	4.9	4.7	4.6	4.6	4.6	4.3	4.4	4.5	4.6	4.7	4.5	4.5	5.0
0	4.7	4.8	4.9	4.9	4.9	4.8	4.8	5.0	4.9	4.8	4.8	4.6	4.6	4.7	4.6	4.5	4.6	4.8	5.0	5.0	5.0	5.0	5.2
0	4.7	4.9	4.6	4.7	4.7	4.9	5.0	4.9	4.9	4.9	4.7	4.5	4.7	4.8	4.8	4.6	5.0	5.3	5.5	5.6	6.0	6.2	6.8
0	4.7	4.7	4.4	4.2	4.7	4.9	5.0	4.9	5.0	4.9	4.7	4.7	5.0	5.2	5.2	5.1	5.7	6.7	7.2	7.8	8.7	8.8	9.0
0	4.8	4.7	4.5	4.5	4.9	4.9	5.0	5.0	5.1	5.0	5.0	5.1	5.3	5.8	7.2	6.8	7.8	8.8	9.0	9.2	9.3	9.2	9.4
0	4.8	4.9	4.7	4.8	5.0	5.0	5.1	5.1	5.3	5.2	5.2	5.3	5.6	7.3	8.6	8.6	9.1	9.2	9.3	9.3	9.3	9.2	9.4
0	4.9	4.9	4.5	4.8	5.1	5.1	5.1	5.3	5.4	5.5	5.4	5.4	5.8	7.6	8.4	8.9	9.2	9.3	9.3	9.3	9.3	9.2	9.4
0	5.0	4.8	4.6	4.9	5.1	5.1	5.2	5.4	5.5	5.6	6.1	6.3	6.9	8.3	8.6	9.2	9.2	9.3	9.3	9.3	9.3	9.2	9.3
0	5.1	4.9	4.8	5.1	5.2	5.3	5.3	5.5	5.7	7.1	7.7	7.2	8.4	8.8	9.1	9.2	9.2	9.2	9.3	9.3	9.3	9.2	9.3
0	5.2	5.1	5.0	5.1	5.2	5.3	5.5	5.6	6.3	8.1	8.7	8.8	9.1	9.2	9.2	9.2	9.2	9.2	9.3	9.3	9.3	9.2	9.3
0	5.2	5.2	4.9	5.0	5.3	5.5	5.6	6.0	7.8	8.7	9.1	9.1	9.1	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.3
0	5.3	5.2	4.9	5.1	5.4	5.5	5.5	6.6	8.4	9.0	9.1	9.1	9.1	9.1	9.2	9.2	9.2	9.2	9.2	9.2	9.2	9.1	9.3
0	5.4	5.3	5.1	5.5	5.5	5.5	6.2	8.0	8.9	9.1	9.1	9.1	9.1	9.1	9.1	9.2	9.2	9.2	9.2	9.1	9.1	9.0	9.2
0	5.5	5.5	5.5	5.5	5.3	5.5	7.3	8.8	9.0	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.0	8.9	8.8	8.6	8.7
0	5.6	5.7	5.4	5.0	5.3	6.7	8.5	8.9	9.0	9.0	9.1	9.1	9.1	9.1	9.0	9.0	8.9	8.8	8.5	8.0	7.7	7.0	6.2
0	5.7	5.7	5.1	5.0	6.4	8.1	8.8	8.9	9.0	9.0	9.0	9.0	9.0	9.0	8.8	8.6	8.4	7.9	7.1	6.5	6.2	5.9	5.7
0	5.7	5.4	5.2	5.9	6.6	7.2	8.1	8.3	8.6	8.8	8.8	8.8	8.8	8.7	8.1	6.9	6.3	6.1	6.1	5.9	5.7	5.5	5.7
0	5.8	5.7	5.8	5.8	5.9	6.0	6.1	6.7	7.7	8.4	8.5	8.5	8.5	8.3	6.8	6.1	5.9	5.9	5.8	5.8	5.7	5.7	5.7

1 SURFACE WIND ANGLE

0	139.	138.	138.	138.	138.	138.	137.	138.	137.	137.	137.	137.	137.	137.	137.	137.	137.	137.	137.	137.	137.	137.	137.
0	139.	144.	141.	139.	137.	136.	138.	139.	143.	140.	139.	139.	140.	138.	140.	139.	140.	137.	139.	139.	139.	137.	137.
0	140.	144.	143.	140.	139.	138.	137.	136.	139.	140.	139.	139.	141.	140.	140.	140.	141.	141.	140.	138.	138.	138.	137.
0	140.	144.	143.	140.	139.	141.	139.	138.	139.	140.	138.	139.	139.	140.	140.	140.	139.	140.	137.	137.	137.	135.	137.
0	140.	148.	146.	142.	141.	141.	141.	139.	140.	141.	140.	137.	136.	136.	136.	136.	135.	136.	135.	132.	134.	134.	137.
0	141.	145.	149.	144.	141.	141.	142.	139.	139.	141.	141.	140.	138.	135.	137.	136.	134.	133.	133.	131.	132.	136.	136.
0	141.	142.	148.	147.	140.	139.	139.	139.	136.	139.	140.	139.	139.	137.	138.	138.	137.	135.	133.	134.	133.	136.	136.
0	141.	141.	146.	149.	144.	139.	137.	137.	136.	135.	138.	138.	137.	136.	137.	138.	137.	136.	135.	135.	136.	137.	138.
0	141.	139.	140.	144.	144.	141.	139.	136.	135.	135.	136.	137.	137.	138.	139.	138.	137.	138.	139.	140.	141.	142.	142.
0	141.	141.	143.	140.	141.	141.	139.	138.	135.	135.	137.	137.	136.	139.	144.	140.	140.	141.	142.	142.	142.	143.	142.
0	141.	141.	145.	143.	140.	141.	140.	139.	137.	135.	137.	138.	138.	141.	146.	144.	142.	142.	142.	142.	142.	143.	142.
0	141.	142.	144.	142.	140.	140.	141.	140.	139.	136.	135.	138.	138.	141.	144.	145.	142.	142.	142.	142.	143.	143.	142.
0	141.	141.	144.	141.	139.	139.	140.	140.	139.	139.	135.	137.	139.	142.	142.	143.	142.	142.	142.	142.	143.	143.	142.
0	140.	140.	145.	142.	140.	139.	138.	140.	140.	141.	140.	138.	142.	142.	142.	142.	142.	142.	142.	142.	142.	143.	142.
0	140.	140.	144.	142.	140.	140.	139.	139.	141.	143.	142.	141.	142.	142.	142.	142.	142.	142.	142.	142.	142.	143.	142.
0	140.	139.	144.	143.	139.	139.	141.	143.	144.	143.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	143.	142.
0	140.	138.	141.	142.	139.	137.	138.	143.	145.	143.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	143.	142.
0	140.	138.	141.	143.	139.	140.	140.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	143.	142.
0	140.	138.	140.	144.	142.	141.	143.	143.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	141.
0	139.	138.	139.	139.	142.	141.	143.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	141.	141.	141.	141.	137.
0	139.	139.	140.	140.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	140.	138.	138.	139.	140.	136.
0	139.	140.	143.	14..	142.	144.	143.	141.	141.	141.	141.	141.	141.	141.	141.	141.	138.	136.	137.	137.	136.	136.	137.	134.
0	139.	139.	139.	138.	138.	138.	138.	138.	140.	141.	141.	141.	141.	141.	141.	138.	137.	137.	136.	136.	137.	137.	137.

EOF152
0:

APRIL 3 1982 0100 EST
SURFACE WIND FIELD PREDICTED BY A 1 KM GRID MODEL

1 SURFACE WIND SPEED (M/S)

0	5.0	5.0	5.0	5.0	5.1	5.0	5.0	5.0	5.0	4.9	4.9	5.0	5.1	5.2	5.1	5.2	5.1	5.1	5.2	5.1	5.1	5.2	5.2
0	5.0	5.1	5.1	5.0	5.1	5.0	5.0	5.2	5.3	4.9	4.5	4.4	4.6	5.1	5.2	5.1	4.8	4.8	4.6	4.8	4.9	5.0	5.2
0	5.0	5.0	4.9	4.9	5.1	4.9	5.1	5.3	5.3	4.8	4.4	4.3	4.5	4.9	5.1	5.1	4.8	4.9	4.8	4.9	4.8	4.9	5.3
0	5.1	5.0	5.0	5.2	4.9	5.1	5.2	5.3	5.2	4.6	4.2	4.4	4.5	4.8	4.9	4.9	4.7	4.9	4.9	4.8	4.8	4.9	5.3
0	5.1	5.3	5.3	5.0	5.0	5.3	4.9	5.1	5.0	4.4	4.3	4.3	4.3	4.5	4.9	5.1	4.9	5.0	4.9	4.9	4.8	4.9	5.4
0	5.2	5.4	5.1	5.1	5.3	4.9	4.9	5.2	5.0	4.4	4.3	4.0	4.5	4.7	5.0	5.0	5.1	5.0	5.0	4.9	4.9	5.0	5.3
0	5.2	5.2	5.2	5.2	5.1	5.0	5.2	5.1	4.8	4.5	4.0	4.4	4.7	4.7	4.9	5.2	5.2	5.0	5.1	4.8	4.8	5.0	5.3
0	5.2	5.3	5.2	5.1	5.0	5.0	5.0	4.9	4.7	4.4	4.1	4.7	4.5	4.8	5.0	5.2	5.1	5.1	5.0	4.9	5.1	5.1	5.4
0	5.2	5.3	5.1	5.0	5.1	5.2	5.0	4.7	4.8	4.5	4.6	4.6	4.7	4.9	5.0	5.4	5.1	5.4	5.1	5.2	5.1	5.0	5.4
0	5.3	5.2	5.2	5.1	5.2	5.1	5.0	4.8	4.9	4.6	4.8	4.5	4.9	5.0	5.4	5.4	5.2	5.4	5.2	5.4	5.1	5.1	5.4
0	5.3	5.4	5.3	5.2	5.2	5.1	4.9	4.8	4.7	4.6	4.6	4.7	5.0	5.1	5.4	5.4	5.6	5.7	5.8	5.7	5.5	5.5	5.4
0	5.3	5.5	5.0	5.3	5.1	5.1	4.9	4.8	4.7	4.9	4.9	5.1	5.2	5.4	5.8	6.0	6.1	6.2	6.4	6.3	6.3	6.1	5.1
0	5.3	5.1	5.2	5.2	5.1	5.1	5.0	4.9	5.0	5.2	5.4	5.6	5.7	6.0	6.3	6.5	6.5	6.8	6.9	6.7	6.6	6.4	5.6
0	5.3	5.1	5.2	5.1	5.3	5.3	5.0	5.1	5.3	5.6	5.9	6.1	6.0	6.5	6.9	6.9	6.9	7.1	6.7	6.4	6.2	6.8	8.4
0	5.3	5.2	5.2	5.3	5.4	5.1	5.2	5.4	5.8	6.0	6.3	6.3	6.4	7.1	7.3	[illegible]	6.7	6.2	6.4	6.4	6.7	7.8	9.1
0	5.3	5.3	5.3	5.3	5.1	5.2	5.5	5.7	6.1	6.5	6.6	6.2	6.6	7.4	7.1	6.5	6.9	7.1	7.3	7.4	7.7	8.4	9.1
0	5.3	5.4	5.3	5.1	5.1	5.3	5.6	6.0	6.4	6.5	6.1	6.0	7.1	7.6	7.5	7.5	7.8	8.0	8.1	8.2	8.3	8.7	9.1
0	5.3	5.4	5.2	5.0	4.9	5.3	5.8	6.3	6.5	6.1	5.8	6.7	7.7	8.2	8.3	8.4	8.5	8.6	8.6	8.6	8.6	8.8	9.1
0	5.4	5.4	5.0	4.9	5.1	5.9	6.3	6.4	6.2	5.8	6.3	7.5	8.1	8.5	8.6	8.7	8.7	8.8	8.7	8.6	8.6	8.8	9.1
0	5.4	5.2	5.0	5.1	5.5	6.1	6.2	6.2	5.7	5.7	6.9	7.8	8.3	8.6	8.6	8.7	8.7	8.7	8.6	8.5	8.5	8.8	9.1
0	5.4	5.1	4.9	5.1	5.6	5.8	6.0	5.7	5.6	6.5	7.5	8.1	8.5	8.6	8.6	8.7	8.7	8.7	8.6	8.5	8.5	8.7	9.1
0	5.4	5.3	5.2	5.5	5.4	5.4	6.0	6.7	7.3	8.0	8.4	8.7	8.8	8.8	8.9	8.9	8.9	8.9	8.8	8.8	8.8	8.9	9.1
0	5.4	5.4	5.4	5.4	5.5	5.9	6.8	8.5	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1	9.1

1 SURFACE WIND ANGLE

0	138.	138.	138.	138.	137.	138.	137.	137.	137.	138.	138.	137.	137.	137.	137.	137.	137.	137.	136.	136.	136.	136.	136.
0	138.	138.	138.	138.	139.	137.	138.	137.	137.	140.	143.	148.	147.	138.	138.	139.	137.	137.	139.	139.	137.	139.	136.
0	138.	135.	136.	137.	138.	136.	136.	135.	136.	141.	143.	145.	147.	140.	134.	139.	138.	137.	137.	139.	137.	139.	136.
0	137.	134.	134.	136.	136.	138.	136.	135.	134.	140.	143.	144.	144.	140.	131.	135.	139.	138.	138.	138.	138.	137.	136.
0	137.	135.	136.	136.	136.	136.	135.	133.	134.	138.	141.	141.	142.	143.	135.	130.	136.	137.	138.	139.	139.	138.	136.
0	137.	134.	137.	136.	137.	138.	137.	133.	132.	139.	142.	139.	140.	138.	138.	133.	135.	136.	138.	140.	139.	137.	136.
0	137.	134.	134.	136.	137.	136.	137.	136.	133.	137.	142.	141.	138.	139.	137.	134.	135.	134.	137.	137.	140.	139.	136.
0	137.	133.	134.	134.	134.	137.	137.	137.	133.	138.	138.	140.	137.	138.	136.	135.	135.	136.	137.	138.	138.	139.	136.
0	137.	131.	132.	134.	133.	135.	136.	139.	137.	137.	142.	139.	138.	137.	136.	136.	134.	136.	137.	140.	139.	138.	136.
0	137.	130.	131.	131.	134.	134.	135.	137.	139.	137.	141.	141.	141.	137.	135.	136.	136.	136.	137.	140.	140.	139.	136.
0	137.	137.	132.	132.	130.	133.	134.	136.	137.	138.	139.	139.	140.	139.	137.	136.	138.	138.	140.	143.	144.	141.	136.
0	137.	142.	136.	136.	132.	132.	134.	135.	138.	139.	140.	141.	140.	139.	139.	138.	139.	139.	142.	145.	147.	144.	136.
0	137.	141.	139.	135.	134.	132.	134.	135.	137.	139.	141.	143.	142.	140.	140.	141.	141.	140.	141.	143.	144.	141.	136.
0	137.	139.	143.	139.	137.	134.	134.	135.	136.	139.	141.	143.	141.	140.	140.	141.	139.	139.	139.	140.	142.	140.	141.
0	137.	138.	140.	140.	140.	138.	138.	136.	136.	139.	142.	145.	139.	134.	137.	139.	137.	135.	137.	139.	140.	141.	142.
0	137.	136.	140.	140.	140.	138.	138.	138.	137.	140.	142.	145.	142.	132.	132.	136.	137.	136.	137.	141.	143.	142.	142.
0	137.	135.	137.	139.	140.	138.	137.	138.	138.	141.	144.	142.	142.	137.	134.	136.	138.	139.	141.	143.	144.	143.	142.
0	137.	136.	137.	136.	136.	136.	137.	138.	139.	143.	146.	143.	142.	140.	139.	139.	140.	141.	142.	144.	144.	143.	142.
0	137.	136.	138.	140.	137.	136.	136.	140.	141.	144.	146.	143.	142.	141.	140.	140.	141.	141.	142.	143.	144.	143.	142.
0	137.	134.	136.	138.	137.	136.	136.	140.	142.	143.	144.	142.	141.	140.	140.	140.	140.	140.	141.	142.	143.	142.	142.
0	137.	132.	134.	135.	135.	133.	132.	137.	143.	142.	141.	141.	140.	140.	140.	140.	140.	140.	141.	142.	142.	142.	142.
0	137.	134.	134.	136.	135.	136.	137.	139.	143.	143.	142.	141.	141.	141.	141.	141.	141.	141.	142.	143.	142.	142.	142.
0	137.	137.	137.	137.	136.	137.	138.	141.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.	142.

[OE:52]
01

SEATTLE 3 1982 0700 PST
SURFACE WIND FIELD PREDICTED BY A 5 KM GRID MODEL

SURFACE WIND SPEED (M/S)

1																							
0		4.9	5.1	5.2	5.3	5.4	5.4	5.6	5.5	5.7	6.0	5.9	5.9	6.0	5.9	6.0	6.1	6.1	6.0	6.4	6.3	6.5	6.4	6.4
0		4.9	5.3	5.4	5.7	5.8	5.7	6.0	5.7	5.9	6.3	6.4	6.3	6.4	6.4	6.4	6.4	6.4	6.3	6.7	6.7	6.8	6.5	6.5
0		4.9	5.2	5.5	5.9	6.0	6.2	6.2	6.0	6.2	6.4	6.5	6.4	6.5	6.6	6.5	6.6	6.4	6.5	6.8	6.9	6.9	6.7	6.6
0		5.0	5.4	5.8	6.1	6.3	6.2	6.2	6.3	6.6	6.5	6.5	6.6	6.6	6.5	6.5	6.6	6.5	6.7	6.9	7.0	6.9	6.7	6.9
0		5.1	5.6	5.9	6.2	6.4	6.3	6.4	6.7	6.7	6.5	6.7	6.7	6.6	6.5	6.6	6.6	6.7	6.9	7.1	7.2	7.0	7.0	7.4
0		5.4	5.7	5.8	6.2	6.4	6.4	6.5	6.8	6.6	6.6	6.7	6.7	6.8	6.9	7.0	6.9	7.2	7.4	7.6	7.7	7.5	7.4	7.8
0		5.5	5.9	5.9	6.2	6.5	6.5	6.6	6.8	6.8	6.7	6.8	6.8	7.0	7.2	7.2	7.2	7.5	7.8	8.0	8.0	8.1	7.9	8.3
0		5.7	6.1	5.9	6.0	6.4	6.7	6.9	7.0	7.0	7.1	6.9	7.0	7.3	7.5	7.5	7.6	8.0	8.2	8.4	8.5	8.7	8.9	9.8
0		5.9	6.2	6.0	6.1	6.5	6.9	7.1	7.2	7.3	7.3	7.2	7.4	7.6	7.8	7.8	8.0	8.3	9.1	9.5	9.9	10.5	10.6	11.0
0		6.1	6.4	6.3	6.6	6.9	7.1	7.3	7.4	7.6	7.6	7.6	7.8	8.0	7.8	8.1	9.4	9.9	10.6	10.9	11.0	11.0	10.9	11.1
0		6.3	6.7	6.5	6.9	7.1	7.2	7.5	7.7	7.9	7.9	7.9	8.0	8.0	9.0	10.0	10.4	11.0	11.1	11.1	11.1	11.0	10.9	11.0
0		6.5	6.8	6.6	7.0	7.4	7.5	7.6	7.9	8.0	8.3	8.2	8.2	8.1	9.5	10.1	10.6	11.1	11.0	11.0	11.0	11.0	10.8	11.0
0		6.8	6.9	6.8	7.3	7.6	7.7	7.8	8.1	8.2	8.3	8.8	9.0	9.0	9.9	10.5	10.9	11.0	11.0	11.0	10.9	10.9	10.7	10.9
0		6.9	7.2	7.1	7.5	7.8	8.0	8.1	8.2	8.0	8.9	10.1	9.7	10.0	10.7	10.9	10.9	10.9	10.9	10.9	10.8	10.8	10.8	10.7	10.6	10.8
0		7.2	7.5	7.4	7.7	7.9	8.1	8.3	8.1	8.1	9.5	10.6	10.7	10.8	10.9	10.9	10.9	10.9	10.8	10.8	10.8	10.7	10.7	10.7	10.5	10.7
0		7.4	7.7	7.4	7.8	8.2	8.4	8.2	7.9	9.1	10.4	10.9	10.	10.9	10.8	10.8	10.8	10.8	10.8	10.7	10.7	10.7	10.6	10.4	10.6
0		7.6	7.9	7.7	8.1	8.4	8.5	8.0	8.2	9.7	10.7	10.8	10.8	10.8	10.8	10.8	10.7	10.7	10.7	10.7	10.7	10.6	10.6	10.4	10.6
0		7.8	8.2	8.0	8.4	8.6	8.3	8.0	9.3	10.6	10.8	10.8	10.7	10.7	10.7	10.7	10.6	10.6	10.6	10.6	10.6	10.6	10.8	10.8	10.7	10.4
0		8.1	8.5	8.4	8.4	8.5	7.9	8.5	10.1	10.7	10.7	10.7	10.7	10.7	10.6	10.6	10.6	10.6	10.6	10.6	10.7	10.9	11.5	11.7	11.8	11.1	10.1
0		8.3	8.7	8.5	8.3	8.0	8.2	9.6	10.5	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.7	11.2	11.6	12.3	12.3	11.4	10.7	10.1	10.1
0		8.5	8.8	8.5	8.1	8.2	9.3	10.4	10.6	10.6	10.6	10.6	10.5	10.5	10.5	10.8	11.2	11.6	12.3	12.0	12.2	11.2	10.7	10.4	10.3	10.1	9.7	10.1
0		8.6	8.7	8.5	8.9	9.1	9.2	9.5	10.1	10.3	10.4	10.4	10.4	10.5	10.9	12.0	12.2	11.2	10.7	10.4	10.3	10.1	10.2	10.2	10.2	10.2	10.2
0		8.9	8.8	9.0	9.1	9.3	9.4	9.5	9.9	10.2	10.3	10.3	10.4	10.4	10.3	10.2	10.1	10.1	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2

SURFACE WIND ANGLE

1																								
0		108.	106.	105.	105.	105.	106.	105.	106.	105.	103.	104.	105.	105.	106.	106.	107.	107.	108.	106.	106.	106.	107.	108.
0		110.	112.	108.	107.	106.	106.	108.	109.	108.	107.	108.	108.	109.	109.	110.	110.	111.	109.	109.	109.	111.	111.	109.
0		113.	113.	109.	107.	107.	107.	108.	107.	108.	109.	109.	110.	111.	112.	112.	112.	112.	110.	110.	110.	111.	111.	110.
0		115.	113.	111.	109.	109.	110.	108.	107.	109.	111.	109.	111.	112.	113.	112.	113.	111.	110.	109.	110.	110.	108.	109.
0		116.	118.	114.	112.	111.	111.	110.	109.	112.	112.	111.	111.	110.	110.	110	109	107	106	105	106.	106.	105.	105.
0		116.	119.	118.	114.	112.	112.	111.	111.	112.	112.	112.	111.	109.	108.	108.	107.	104.	103.	103.	103.	103.	104.	103.
0		117.	119.	120.	116.	112.	111.	110.	110.	110.	112.	112.	110.	109.	108.	108.	106.	103.	102.	101.	101.	100.	100.	101.
0		118.	119.	121.	119.	113.	110.	109.	109.	109.	109.	110.	108.	107.	106.	106.	103.	101.	99.	97.	96.	95.	96.	100.
0		118.	118.	117.	115.	113.	111.	109.	107.	107.	108.	107.	106.	106.	106.	101.	98.	97.	97.	97.	97.	98.	99.	103.
0		118.	118.	117.	112.	112.	110.	108.	107.	106.	107.	107.	106.	106.	104.	103.	97.	98.	100.	100.	101.	103.	103.	103.
0		118.	118.	118.	113.	111.	110.	108.	107.	106.	105.	106.	106.	106.	105.	106.	101.	102.	103.	103.	103.	103.	103.	103.
0		117.	118.	116.	115.	111.	110.	109.	108	106.	104.	103.	103.	102.	104.	104.	104.	103.	103.	103.	103.	103.	103.	103.
0		117.	117.	115.	111.	110.	109.	108.	107.	106.	101.	98.	100.	98.	102.	102.	104.	104.	103.	103.	103.	103.	103.	103.
0		116.	116.	115.	111.	110.	108.	107.	107.	104.	100.	98.	98.	100.	102.	103.	104.	104.	103.	103.	103.	103.	103.	103.
0		115.	116.	115.	111.	109.	108.	107.	105.	99.	102.	102.	100.	103.	104.	104.	104.	104.	103.	103.	103.	103.	103.	103.
0		115.	115.	115.	110.	109.	108.	108.	103.	100.	103.	104.	103.	104.	104.	104.	104.	104.	103.	103.	103.	103.	103.	103.
0		114.	114.	113.	110.	108.	107.	103.	99.	103.	104.	104.	104.	104.	104.	104.	104.	103.	103.	103.	103.	103.	104.	104.
0		113.	112.	112.	111.	107.	106.	98.	100.	104.	104.	104.	104.	104.	104.	104.	104.	103.	103.	104.	105.	107.	109.	111.
0		112.	112.	112.	112.	104.	99.	99.	104.	104.	104.	104.	104.	104.	104.	104.	104.	103.	103.	104.	105.	106.	107.	111.
0		111.	112.	111.	108.	101.	96.	101.	104.	104.	104.	104.	104.	104.	104.	104.	104.	104.	105.	106.	107.	111.	111.	115.
0		111.	111.	108.	105.	104.	107.	106.	105.	104.	104.	104.	104.	104.	104.	104.	104.	104.	106.	112.	114.	113.	113.	113.
0		110.	109.	107.	105.	106.	112.	109.	105.	103.	103.	103.	103.	103.	102.	103.	107.	110.	110.	106.	104.	103.	104.	104.
0		110.	111.	109.	109.	107.	107.	106.	105.	104.	104.	104.	104.	104.	103.	103.	103.	103.	104.	104.	104.	105.	105.	105.

APRIL 3 1982 0700 EST
SURFACE WIND FIELD PREDICTED BY A 1 KM GRID MODEL

1 SURFACE WIND SPEED (M/S)

```
0      6.0  6.0  6.1  6.1  6.2  6.1  6.1  6.2  6.2  6.1  6.1  6.2  6.5  6.6  6.5  6.6  6.5  6.5  6.6  6.6  6.6  6.7  6.7
0      6.1  6.4  6.4  6.3  6.4  6.4  6.4  6.6  6.7  6.4  6.0  5.8  6.1  6.7  6.7  6.7  6.6  6.6  6.5  6.4  6.4  6.4  6.8
0      6.1  6.5  6.3  6.4  6.5  6.4  6.6  6.8  6.8  6.3  6.0  5.9  6.0  6.6  6.9  6.7  6.6  6.7  6.6  6.4  6.3  6.4  7.0
0      6.2  6.6  6.5  6.7  6.4  6.5  6.7  6.8  6.8  6.2  5.9  6.0  6.1  6.5  7.0  6.8  6.6  6.8  6.7  6.4  6.3  6.5  7.0
0      6.3  6.8  6.7  6.5  6.6  6.7  6.5  6.7  6.7  6.2  6.1  6.1  6.1  6.2  6.9  7.2  6.8  6.8  6.7  6.4  6.3  6.5  7.1
0      6.4  7.0  6.6  6.6  6.7  6.4  6.5  6.9  6.8  6.2  6.1  6.1  6.4  6.6  6.8  7.0  7.0  6.9  6.7  6.5  6.4  6.6  7.1
0      6.4  6.9  6.7  6.8  6.6  6.6  6.7  6.7  6.7  6.4  6.0  6.3  6.7  6.6  6.9  7.2  7.2  7.0  6.9  6.5  6.2  6.6  7.1
0      6.5  6.9  6.8  6.8  6.7  6.7  6.7  6.6  6.7  6.4  6.2  6.6  6.6  6.8  7.0  7.2  7.1  7.1  6.8  6.5  6.6  6.7  7.2
0      6.6  7.1  6.8  6.8  6.9  6.9  6.7  6.5  6.7  6.5  6.4  6.6  6.7  6.9  7.0  7.3  7.2  7.3  6.9  6.6  6.5  6.7  7.2
0      6.7  7.1  6.9  7.0  6.9  6.9  6.8  6.7  6.7  6.6  6.6  6.5  6.8  7.0  7.3  7.3  7.2  7.3  7.0  6.7  6.4  6.7  7.3
0      6.6  7.0  7.0  7.1  7.1  7.0  6.8  6.7  6.7  6.7  6.6  6.7  6.9  7.0  7.3  7.3  7.3  7.4  7.2  6.7  6.4  6.8  7.3
0      6.7  6.9  6.7  7.0  7.1  7.1  6.9  6.8  6.7  6.8  6.8  6.8  7.0  7.2  7.4  7.5  7.5  7.5  7.3  6.7  6.5  6.9  7.4
0      6.7  6.8  6.8  7.1  7.0  7.1  7.0  6.9  7.0  6.9  6.9  7.1  7.5  7.6  7.5  7.5  7.8  7.5  6.9  6.7  7.2  7.6
0      6.7  6.8  6.7  6.9  7.1  7.2  7.1  7.1  7.2  7.1  7.1  6.8  7.1  7.8  7.9  7.4  7.7  8.2  7.5  6.9  5.5  6.8  9.6
0      6.8  7.0  6.9  7.0  7.1  7.0  7.1  7.3  7.4  7.3  6.9  5.6  7.5  9.5  8.5  [illegible]  7.8  8.5  7.1  6.8  7.3  8.6  10.0
0      6.8  7.1  7.0  7.1  6.9  7.1  7.3  7.4  7.6  7.4  6.8  5.0  6.7  10.7  9.5  7.1  7.4  8.7  8.6  8.3  8.4  9.3  10.0
0      6.9  7.3  7.1  7.0  6.9  7.2  7.4  7.6  7.7  7.0  5.7  5.2  7.0  9.4  9.5  8.9  9.0  9.2  9.2  9.0  9.0  9.5  10.0
0      6.9  7.3  7.1  7.1  7.0  7.2  7.5  7.6  7.4  5.6  4.9  6.6  8.8  9.5  9.6  9.6  9.6  9.7  9.6  9.3  9.1  9.5  10.0
0      7.0  7.4  6.9  6.9  7.1  7.7  7.8  7.4  6.6  4.8  5.3  8.1  9.3  9.7  9.8  9.8  9.9  9.8  9.7  9.3  9.2  9.5  9.9
0      7.0  7.3  7.1  7.1  7.3  7.6  7.5  7.1  5.8  5.2  6.7  9.0  9.6  9.8  9.9  9.9  9.9  9.8  9.6  9.3  9.2  9.5  9.9
0      7.0  7.3  7.1  7.2  7.4  7.5  7.4  6.2  5.4  6.6  8.7  9.4  9.8  9.8  9.9  9.8  9.8  9.8  9.6  9.3  9.2  9.5  9.9
0      7.1  7.4  7.3  7.5  7.3  6.4  6.1  6.4  7.1  8.7  9.4  9.7  9.8  9.9  9.9  9.8  9.8  9.8  9.7  9.5  9.3  9.6  9.9
0      7.1  7.1  7.1  7.1  7.4  7.8  8.6  9.7  9.9  10.0  9.9  9.9  9.9  9.9  9.9  9.9  9.9  9.9  9.9  9.9  9.9  9.9  9.9
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1 SURFACE WIND ANGLE

```
0      108. 107. 107. 107. 107. 107. 107. 107. 107. 108. 108. 107. 104. 103. 104. 104. 105. 104. 103. 103. 104. 103. 103.
0      107. 110. 110. 110. 110. 109. 110. 110. 111. 110. 110. 110. 110. 107. 107. 108. 105. 105. 106. 106. 105. 105. 102.
0      107. 108. 108. 109. 110. 108. 110. 109. 110. 111. 109. 109. 110. 107. 105. 108. 106. 106. 105. 107. 105. 105. 101.
0      106. 106. 107. 108. 107. 109. 108. 108. 107. 108. 107. 107. 107. 106. 101. 104. 105. 105. 104. 105. 104. 103. 101.
0      106. 107. 108. 107. 107. 108. 106. 106. 106. 106. 105. 104. 104. 105. 102. 100. 103. 104. 103. 104. 103. 102. 101.
0      105. 106. 107. 107. 108. 107. 107. 106. 104. 105. 105. 101. 103. 103. 104. 101. 102. 103. 103. 104. 104. 102. 101.
0      105. 105. 106. 107. 107. 106. 108. 107. 104. 104. 103. 103. 103. 102. 102. 102. 102. 101. 103. 102. 103. 103. 101.
0      105. 105. 105. 105. 105. 107. 107. 106. 102. 103. 101. 104. 101. 102. 102. 102. 102. 102. 102. 102. 103. 103. 101.
0      105. 103. 104. 104. 104. 106. 106. 106. 104. 103. 104. 103. 101. 101. 101. 103. 101. 103. 102. 104. 103. 102. 101.
0      104. 103. 103. 103. 105. 105. 105. 105. 105. 102. 104. 102. 103. 101. 102. 102. 102. 102. 102. 103. 102. 101. 100.
0      104. 107. 104. 103. 103. 104. 103. 104. 103. 102. 102. 101. 102. 102. 102. 101. 102. 102. 103. 104. 102. 101. 100.
0      105. 110. 104. 105. 102. 103. 103. 103. 103. 103. 102. 102. 100. 101. 102. 102. 102. 102. 103. 103. 103. 101. 100.
0      105. 107. 106. 104. 103. 103. 103. 102. 103. 104. 103. 103. 100. 100. 101. 102. 98. 100. 99. 92. 94. 84. 101.
0      105. 106. 108. 106. 105. 104. 102. 102. 103. 104. 103. 100. 88. 96. 99. 98. 91. 93. 97. 78. 71. 82. 104.
0      105. 106. 107. 107. 107. 104. 104. 103. 104. 104. 103. 97. 80. 86. 93. [illegible] 79. 76. 71. 72. 80. 98. 104.
0      105. 105. 107. 106. 106. 104. 105. 105. 104. 104. 100. 86. 84. 81. 78. 72. 80. 79. 84. 92. 98. 102. 104.
0      105. 105. 105. 105. 105. 104. 104. 104. 103. 101. 85. 72. 93. 88. 81. 85. 95. 97. 98. 101. 103. 104. 104.
0      105. 106. 105. 103. 102. 103. 104. 103. 101. 93. 72. 86. 99. 99. 97. 99. 101. 102. 103. 104. 105. 104. 104.
0      104. 105. 105. 104. 102. 104. 102. 102. 97. 82. 85. 99. 102. 102. 102. 102. 103. 103. 104. 104. 105. 104. 104.
0      104. 103. 103. 103. 104. 103. 99. 96. 81. 71. 95. 101. 102. 102. 102. 103. 103. 103. 103. 103. 104. 104. 104.
0      104. 100. 101. 101. 102. 98. 87. 76. 63. 82. 98. 101. 101. 101. 101. 101. 101. 102. 102. 102. 103. 103. 104.
0      104. 101. 101. 102. 99. 95. 87. 81. 86. 98. 100. 101. 102. 102. 102. 102. 102. 102. 102. 103. 103. 104. 104.
0      104. 105. 104. 104. 102. 101. 102. 104. 104. 104. 104. 104. 104. 104. 104. 104. 104. 104. 104. 104. 104. 104. 104.
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100 35.
0:

APRIL 3 1983 1900 EST

SURFACE WIND FIELD PRODUCED BY A 5 KM GRID MODEL

1 SURFACE WIND SPEED (M/S)

0	11.3	11.3	11.3	11.3	11.3	11.4	11.4	11.4	11.4	11.4	11.5	11.5	11.6	11.6	11.7	11.7	11.8	11.8	11.8	11.8	11.9	11.9	12.0
0	11.4	11.5	11.4	11.4	11.4	11.4	11.6	11.5	11.6	11.6	11.7	11.7	11.8	11.8	11.9	11.9	12.0	11.7	12.0	12.0	12.1	12.1	12.0
0	11.5	11.4	11.3	11.3	11.3	11.3	11.4	11.4	11.5	11.6	11.6	11.7	11.8	11.8	11.8	11.9	11.9	11.9	11.9	11.9	11.9	12.0	12.0	12.1
0	11.5	11.4	11.4	11.4	11.5	11.5	11.4	11.4	11.6	11.7	11.6	11.7	11.8	11.9	11.9	11.9	11.9	11.9	11.9	11.9	11.9	12.0	11.9	12.1
0	11.5	11.7	11.6	11.5	11.5	11.5	11.5	11.6	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.5
0	11.6	11.7	11.7	11.6	11.6	11.6	11.6	11.6	11.6	11.7	11.7	11.7	11.7	11.6	11.6	11.7	11.6	11.5	11.4	11.2	11.7	11.8	12.0	11.8
0	11.6	11.7	11.7	11.7	11.5	11.5	11.5	11.6	11.6	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.6	11.9	12.0	12.2	12.6	12.8	11.6
0	11.6	11.7	11.7	11.7	11.6	11.5	11.5	11.5	11.5	11.6	11.6	11.6	11.6	11.7	12.1	12.0	12.2	12.7	12.6	12.3	11.5	11.1	11.0	
0	11.7	11.6	11.6	11.5	11.6	11.5	11.5	11.4	11.5	11.5	11.5	11.5	11.7	12.4	12.4	12.5	12.3	11.1	10.2	10.3	9.6	9.3	10.4	
0	11.7	11.6	11.5	11.4	11.5	11.5	11.5	11.4	11.4	11.5	11.5	11.5	11.6	12.0	12.6	10.9	10.2	10.3	9.5	9.5	9.7	10.2	10.2	10.5
0	11.6	11.7	11.6	11.6	11.5	11.5	11.5	11.4	11.5	11.6	11.8	12.0	12.2	11.3	10.2	9.6	9.8	10.4	10.5	10.5	10.6	10.5	10.5	
0	11.6	11.7	11.6	11.5	11.5	11.5	11.5	11.5	11.6	12.2	12.5	12.7	12.2	10.5	10.4	10.6	10.6	10.6	10.6	10.6	10.5	10.5	10.5	
0	11.6	11.6	11.5	11.5	11.5	11.5	11.5	11.6	12.1	12.4	11.7	11.6	10.6	9.8	10.2	10.7	10.7	10.6	10.6	10.5	10.5	10.5	10.5	
0	11.6	11.6	11.6	11.5	11.5	11.5	11.5	11.9	12.5	10.7	9.9	9.8	9.6	10.3	10.6	10.7	10.6	10.6	10.6	10.5	10.5	10.5	10.4	10.4
0	11.6	11.6	11.6	11.5	11.5	11.5	11.7	12.5	11.1	9.9	10.1	9.9	10.5	10.7	10.7	10.7	10.6	10.6	10.5	10.5	10.5	10.4	10.4	
0	11.6	11.6	11.6	11.5	11.5	11.6	12.1	12.0	10.0	10.5	10.8	10.7	10.7	10.7	10.7	10.6	10.6	10.6	10.5	10.5	10.5	10.4	10.4	
0	11.6	11.6	11.5	11.5	11.5	11.7	12.3	10.5	10.4	10.8	10.8	10.8	10.7	10.7	10.7	10.6	10.6	10.6	10.5	10.5	10.5	10.4	10.4	10.4
0	11.6	11.5	11.5	11.6	11.6	12.0	11.3	9.8	10.7	10.8	10.8	10.8	10.7	10.7	10.7	10.6	10.6	10.6	10.5	10.5	10.5	10.6	10.6	10.4
0	11.5	11.5	11.6	11.7	12.2	12.1	10.1	10.6	10.8	10.8	10.8	10.7	10.7	10.7	10.6	10.6	10.6	10.6	10.8	11.1	11.4	11.6	10.4	
0	11.5	11.6	11.6	11.7	12.2	10.8	10.2	10.8	10.8	10.8	10.7	10.7	10.7	10.6	10.6	10.8	10.9	11.2	11.7	11.2	10.9	10.9	11.3	
0	11.5	11.5	11.4	11.7	11.2	10.8	11.1	11.1	10.9	10.7	10.7	10.7	10.6	10.6	11.0	11.8	11.3	10.9	10.8	10.8	10.8	10.6	11.9	
0	11.5	11.4	11.4	11.5	11.1	11.6	11.5	11.0	10.7	10.6	10.5	10.5	10.5	10.5	11.0	11.8	11.5	11.0	10.6	11.1	11.5	11.6	11.9	
0	11.5	11.6	11.6	11.6	11.6	11.5	11.5	11.3	11.0	10.8	10.8	10.7	10.7	10.7	11.1	11.6	11.7	11.7	11.8	11.8	11.9	11.9	12.0	

1 SURFACE WIND ANGLE

0	178.	178.	178.	178.	178.	179.	178.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	
0	178.	178.	179.	178.	178.	179.	178.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	180.	179.	
0	178.	178.	179.	179.	179.	179.	178.	179.	179.	179.	178.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	180.	179.	
0	178.	178.	179.	178.	178.	178.	178.	179.	179.	179.	179.	179.	179.	178.	178.	178.	179.	179.	179.	179.	179.	180.	179.	
0	178.	178.	179.	178.	178.	179.	179.	178.	178.	179.	179.	178.	178.	179.	179.	179.	179.	179.	179.	179.	180.	181.	180.	
0	178.	178.	179.	178.	178.	178.	179.	178.	178.	179.	179.	179.	179.	179.	179.	180.	180.	180.	180.	179.	180.	181.	180.	
0	178.	178.	179.	179.	178.	179.	179.	178.	178.	179.	179.	179.	179.	179.	179.	180.	180.	180.	180.	179.	179.	181.	180.	
0	178.	177.	178.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	180.	180.	178.	178.	179.	177.	176.	180.	179.	
0	178.	177.	178.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	177.	178.	180.	176.	176.	181.	183.	182.	180.	179.	
0	178.	178.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	175.	175.	179.	181.	184.	183.	180.	179.	179.	180.	179.	
0	178.	178.	179.	179.	179.	179.	179.	179.	179.	179.	179.	178.	174.	179.	186.	182.	179.	179.	179.	179.	179.	180.	179.	
0	178.	178.	179.	179.	179.	179.	179.	179.	179.	178.	178.	178.	177.	161.	185.	182.	179.	179.	179.	179.	179.	180.	179.	
0	178.	178.	179.	179.	179.	179.	179.	179.	176.	175.	177.	179.	184.	186.	182.	179.	179.	179.	179.	179.	179.	180.	179.	
0	178.	178.	179.	179.	179.	179.	179.	177.	175.	179.	180.	182.	184.	181.	179.	179.	179.	179.	179.	179.	179.	180.	179.	
0	178.	178.	179.	179.	179.	179.	177.	175.	180.	185.	181.	179.	180.	179.	179.	179.	179.	179.	179.	179.	179.	180.	179.	
0	178.	178.	179.	179.	179.	178.	175.	178.	185.	182.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	180.	179.	
0	178.	178.	179.	179.	179.	176.	175.	182.	185.	180.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	180.	179.	
0	179.	178.	179.	180.	178.	174.	179.	185.	180.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	180.	179.	
0	179.	178.	179.	179.	177.	177.	182.	183.	180.	179.	179.	179.	179.	179.	179.	179.	179.	179.	178.	178.	178.	180.	179.	
0	179.	178.	178.	176.	176.	182.	184.	180.	179.	179.	179.	179.	179.	179.	179.	179.	178.	177.	176.	177.	180.	180.		
0	179.	178.	178.	175.	175.	184.	181.	179.	179.	179.	179.	179.	179.	179.	178.	176.	177.	176.	181.	185.	183.	181.	180.	
0	179.	179.	179.	176.	177.	181.	182.	181.	180.	180.	179.	179.	179.	177.	179.	180.	185.	183.	181.	180.	180.	181.	180.	
0	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	180.	180.	180.	180.	180.	180.	180.	180.	181.	

[OUTPUT]

0:

APRIL 3 1982 1300 EST
SURFACE WIND FIELD PREDICTED BY A 1 KM GRID MODEL

1 SURFACE WIND SPEED (M/S)

0	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.7	10.7	10.7	10.6	10.6	10.5	10.5	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6	10.6
0	10.6	10.5	10.4	10.4	10.5	10.4	10.5	10.5	10.5	10.5	10.4	10.4	10.5	10.4	10.3	10.4	10.3	10.3	10.3	10.3	10.2	10.5	10.5	
0	10.6	10.5	10.5	10.5	10.6	10.5	10.6	10.6	10.6	10.6	10.5	10.5	10.5	10.5	10.4	10.5	10.4	10.5	10.4	10.5	10.4	10.5	10.5	
0	10.6	10.7	10.7	10.9	10.8	10.9	10.8	10.9	10.8	10.8	10.7	10.8	10.7	10.8	10.6	10.7	10.7	10.7	10.7	10.7	10.7	10.6	10.5	
0	10.5	10.6	10.6	10.6	10.6	10.6	10.5	10.6	10.6	10.5	10.5	10.5	10.4	10.4	10.5	10.5	10.4	10.5	10.5	10.5	10.5	10.5	10.5	
0	10.5	10.5	10.5	10.5	10.6	10.5	10.5	10.5	10.4	10.4	10.4	10.3	10.4	10.3	10.4	10.3	10.4	10.4	10.4	10.4	10.5	10.4	10.5	
0	10.5	10.4	10.4	10.5	10.5	10.5	10.5	10.5	10.4	10.4	10.3	10.4	10.3	10.3	10.3	10.3	10.4	10.3	10.4	10.4	10.4	10.5	10.5	
0	10.5	10.4	10.4	10.5	10.5	10.5	10.5	10.5	10.4	10.4	10.3	10.4	10.3	10.5	10.4	10.4	10.4	10.5	10.5	10.5	10.6	10.6	10.5	
0	10.5	10.4	10.4	10.4	10.4	10.4	10.5	10.4	10.5	10.3	10.5	10.4	10.5	10.5	10.4	10.6	10.5	10.7	10.6	10.9	10.9	10.9	10.5	
0	10.5	10.4	10.4	10.4	10.4	10.4	10.4	10.4	10.5	10.4	10.6	10.6	10.8	10.7	10.8	10.9	11.0	11.1	11.2	11.6	11.8	12.0	10.4	
0	10.5	10.6	10.4	10.4	10.3	10.4	10.3	10.4	10.4	10.5	10.7	11.1	11.5	11.4	11.4	11.6	12.0	12.2	12.5	13.0	13.3	13.2	10.4	
0	10.5	10.6	10.4	10.5	10.4	10.4	10.3	10.4	10.5	10.7	11.3	12.1	12.6	12.7	12.7	12.8	13.1	13.5	13.9	13.7	13.7	13.2	10.4	
0	10.5	10.5	10.5	10.4	10.4	10.3	10.4	10.4	10.6	11.1	12.0	13.0	13.0	13.6	13.8	13.7	12.9	13.6	13.4	12.4	11.5	8.0	10.4	
0	10.5	10.5	10.6	10.5	10.5	10.4	10.4	10.6	10.9	11.8	12.7	12.9	10.7	12.5	13.2	12.9	11.0	11.4	10.0	8.0	7.2	6.5	10.1	
0	10.5	10.5	10.5	10.5	10.5	10.4	10.6	10.8	11.5	12.6	12.7	11.4	8.4	9.2	10.9	[illegible]	7.7	6.0	5.6	6.1	5.8	8.6	10.0	
0	10.5	10.5	10.5	10.5	10.4	10.5	10.8	11.2	12.2	12.6	11.8	9.3	8.2	6.8	5.7	5.8	6.8	5.3	5.7	7.5	8.9	9.6	10.0	
0	10.5	10.4	10.4	10.5	10.5	10.7	11.0	11.9	12.5	11.2	9.2	6.9	8.6	7.3	4.9	5.8	8.1	8.9	9.2	9.5	9.7	9.8	10.0	
0	10.5	10.4	10.3	10.4	10.5	10.9	11.7	12.6	12.2	10.4	7.6	7.3	9.0	9.3	9.0	9.2	9.5	9.6	9.7	9.8	9.8	9.9	10.0	
0	10.5	10.2	10.2	10.3	10.5	11.3	12.2	12.3	11.2	9.1	8.1	9.1	9.4	9.5	9.6	9.6	9.6	9.7	9.7	9.7	9.7	9.8	10.0	
0	10.5	10.0	9.9	10.0	10.4	11.1	11.5	10.9	9.0	7.0	8.5	9.0	9.3	9.4	9.4	9.4	9.5	9.5	9.4	9.4	9.5	9.6	10.0	
0	10.5	10.1	10.3	10.3	10.6	10.8	9.9	8.3	6.7	6.9	8.6	9.1	9.3	9.4	9.4	9.4	9.3	9.3	9.3	9.3	9.4	9.4	10.0	
0	10.5	10.5	10.5	10.6	10.6	10.3	9.4	8.4	7.6	9.1	9.5	9.6	9.7	9.7	9.7	9.7	9.7	9.7	9.7	9.6	9.7	9.7	10.0	
0	10.5	10.5	10.5	10.5	10.4	10.3	10.2	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	

1 SURFACE WIND ANGLE

0	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	
0	179.	178.	177.	177.	178.	179.	179.	179.	179.	180.	180.	181.	181.	179.	179.	179.	180.	180.	180.	180.	182.	180.	180.	179.
0	179.	179.	178.	177.	178.	178.	179.	179.	179.	180.	180.	181.	181.	180.	179.	179.	180.	180.	180.	180.	182.	180.	179.	180.
0	179.	179.	178.	177.	178.	178.	179.	179.	179.	179.	180.	181.	181.	180.	180.	180.	180.	180.	181.	182.	180.	180.	180.	
0	179.	179.	178.	177.	178.	178.	179.	179.	179.	179.	180.	180.	181.	181.	180.	180.	179.	180.	180.	180.	182.	181.	180.	180.
0	179.	178.	178.	177.	178.	179.	179.	179.	179.	180.	180.	181.	181.	180.	180.	180.	180.	179.	179.	180.	180.	182.	181.	179.
0	179.	179.	178.	177.	178.	179.	179.	179.	179.	180.	180.	181.	180.	180.	180.	180.	179.	179.	180.	180.	182.	181.	180.	180.
0	179.	178.	178.	177.	178.	179.	179.	179.	179.	180.	180.	180.	181.	180.	180.	179.	180.	180.	180.	182.	180.	180.	180.	
0	179.	178.	177.	177.	178.	179.	179.	180.	180.	180.	181.	180.	180.	180.	180.	179.	179.	179.	180.	182.	181.	180.	180.	
0	179.	179.	178.	176.	178.	179.	179.	179.	180.	180.	180.	180.	180.	180.	179.	179.	179.	179.	180.	181.	180.	180.	180.	
0	179.	179.	178.	177.	178.	179.	179.	180.	180.	180.	179.	179.	180.	180.	180.	179.	178.	179.	179.	178.	179.	179.	180.	180.
0	179.	180.	179.	177.	178.	179.	179.	179.	179.	178.	177.	177.	179.	181.	179.	177.	177.	178.	177.	177.	178.	180.	180.	
0	179.	180.	178.	177.	179.	179.	179.	179.	178.	176.	173.	173.	177.	180.	180.	177.	176.	176.	177.	179.	179.	181.	180.	
0	179.	180.	179.	178.	179.	179.	179.	178.	176.	172.	169.	172.	174.	177.	179.	181.	177.	173.	180.	185.	211.	213.	179.	
0	179.	179.	178.	177.	179.	179.	178.	176.	172.	169.	169.	181.	175.	163.	176.	1[illegible]	183.	175.	204.	213.	204.	182.	179.	
0	179.	179.	179.	177.	179.	179.	177.	174.	169.	168.	172(	192.	192.	149.	161.	211.	206.	190.	184.	184.	184.	182.	179.	
0	179.	179.	178.	178.	179.	178.	175.	171.	168.	170.	182.	208.	199.	180.	175.	182.	182.	181.	180.	182.	182.	182.	179.	
0	179.	179.	178.	177.	177.	176.	173.	170.	170.	181.	204.	201.	184.	181.	180.	180.	180.	180.	181.	181.	181.	181.	179.	
0	179.	179.	178.	176.	176.	172.	169.	170.	175.	194.	205.	189.	183.	180.	179.	179.	179.	179.	179.	180.	181.	181.	179.	
0	179.	180.	178.	175.	172.	169.	167.	171.	184.	202.	200.	185.	181.	180.	179.	179.	179.	179.	179.	180.	181.	181.	179.	
0	179.	179.	178.	174.	171.	167.	166.	178.	206.	203.	185.	181.	180.	179.	179.	179.	179.	179.	179.	180.	180.	180.	179.	
0	179.	179.	177.	175.	173.	175.	178.	187.	191.	182.	181.	180.	179.	179.	179.	179.	179.	179.	179.	180.	180.	180.	179.	
0	179.	179.	179.	179.	179.	180.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	179.	

END OF
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POOR

QUALITY

ORIGINAL